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Lisa Aspalter

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Lisa Aspalter*

Department of Economics, Vienna University of Economics and Business (WU)

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Abstract

In an open economy economic agents distribute their spending between domestic and various import goods and they may reconsider their choice whenever relative international prices change. Armington elasticities quantify these reallocations in demand for goods produced in different countries. Recent analytical frameworks allow to further differentiate between a macro elasticity of substitution between domestic and import goods and a micro elasticity between different import sources. Despite the relevance of Armington elasticities for evaluating trade policy there has been no systematic study on whether micro and macro elasticities significantly differ for highly integrated economies within a free trade area and whether there is a common pattern. Using highly disaggregated data, this paper estimates Armington elasticities for a panel of 15 EMU Member States. Empirical results indicate a significant difference between micro and macro elasticities for up to one half of the consistent product groups considered, implying preferences across EMU countries are not perfectly aligned with non-discriminatory tariffs. I conclude that both the absolute and relative macro elasticities are informative and that heterogeneous preference patterns link to current trade imbalances.

Keywords: International Trade; Armington; Substitution Elasticities; Nested CES-preferences; EMU; Industry-level; Matching Trade and Production Data.
JEL Classification: F14.

*Corresponding author, Address: Welthandelsplatz 1, 1020 Vienna, Austria, telephone: +43 1 313 36-5705, e-mail: *lisa.aspalter@wu.ac.at*. The author is grateful to the FIW project for financial support, to Harald Badinger, Harald Oberhofer and Philipp Piribauer for advice and suggestions, and to attendants of the FIW doctoral seminar for helpful comments.

1 Introduction

In an open economy economic agents distribute their spending between domestic and various import goods and they may reconsider their choice whenever relative international prices change. Armington substitution elasticities quantify these reallocations in demand for goods produced in different countries (Armington 1969). Yet, the standard Armington framework builds upon a rather restrictive assumption. Namely, when international prices change, economic agents do not distinguish between domestic and import goods.

Pioneering work by Feenstra, Luck, Obstfeld, and Russ (2014) provides a generalization of the simple Armington framework. An additional layer of aggregation in a CES demand structure allows to further differentiate between a macro Armington elasticity of substitution between domestic and import goods and a micro Armington elasticity between different import sources. Their empirical work highlights differences in these micro and macro elasticities. In particular, they find that the macro elasticity is significantly lower than the micro elasticity for up to one-half of the goods considered, relying on both simulation studies and highly disaggregated U.S. data.

Despite the relevance of Armington elasticities for evaluating trade policy, there has been no systematic study on whether micro and macro elasticities significantly differ for highly integrated economies within a free trade area and whether there is a common pattern. Empirical findings for the U.S. as in Feenstra, Luck, Obstfeld, and Russ (2014) may not directly translate from a single large open economy to various, small but highly integrated economies within a free trade area such as the European Union (EU) single market. In contrast to other free trade areas the EU single market is not solely based upon zero tariffs and free movement of goods. For example, EU Member States also share common legislative procedures ensuring highly harmonized product standards as well as common judicial institutions monitoring conformance to joint law. Thus, I expect high values for micro and macro Armington elasticities in absolute terms as well as little or no differences in micro and macro Armington elasticities for EU countries.

Using highly disaggregated data, this paper estimates micro and macro Armington elasticities for a panel of 15 European Monetary Union (EMU) Member States (EU-15) prior to 2004. Potential differences in micro and macro elasticities are explicitly addressed using a three-fold nested CES preference structure as introduced by Feenstra, Luck, Obstfeld, and Russ (2014). In contrast to simple Armington elasticity estimates (Balistreri, Al-Qahtani, and Dahl 2010; Huchet-Bourdon and Pishbahar 2009; Imbs and Mejean 2013; Lundmark and Shahrammehr 2011; Mohler and Seitz 2012), an additional layer of aggregation allows to distinguish between substitution on a micro and macro level. Structural parameters are derived from a monopolistically competitive trade model, where countries are separated by Iceberg trade costs, firms differ in their level of productivity and gains to trade arise from increases in product variety. Identification is achieved by heteroscedasticity across source countries for micro elasticity and across goods for macro elasticities. The empirical analysis is performed on a newly constructed panel data set for 15 EU Member States covering detailed bilateral trade and production data for $2,662$ products on a 8-digit Combined Nomenclature

(CN) and Prodcom Classification (PC) level, respectively. Particular attention has to be paid to endogeneity issues, thus Armington elasticities are estimated using a non-linear Instrumental Variable Generalized Methods of Moments (IV-GMM) estimation procedure. Hypothesis testing rests upon bootstrapping techniques.

The empirical analysis indicates significant differences between micro and macro elasticities on an industry-level. For up to one half of the goods observed, I find by means of a bootstrap test that macro elasticities are lower than micro elasticities. Putting these findings in a European context, there are two implications: First, reducing trade barriers in the succession of European integration could have led to substantial productivity decreases in countries with low macro elasticities, ultimately causing large trade imbalances. In general, the higher the degree of substitutability the higher gains to trade and gains to reductions in trade barriers respectively. New trade theory, in particular the heterogeneous firm literature, highlights that gains to trade increase with the degree of substitutability. Decreasing substitutability, or increasing product differentiation, leads to smaller markets and thus less competition, which translates into higher mark-ups, less aggregate productivity and less product variety (Melitz 2003; Melitz and Ottaviano 2008). Moreover, Chaney (2008) finds that a reduction in trade barriers has opposite effects on the size of the exports (intensive margin) and on the set of exporters (extensive margin). Given a low elasticity of substitution a reduction in fixed or variable trade costs leads to an increase in exported quantities which is countered by low-productivity firms entering the export market and thus decreasing average productivity. I expect this effect to be stronger the higher the differences in micro and macro elasticities, i.e. the lower macro elasticities are compared to micro elasticities. Second, fiscal devaluation, as a strategy to reduce trade imbalances, is less effective for countries with low macro elasticities. For example, Gomes, Jacquinot, and Pisani (2014) analyse the effect of shifting taxes from labour to consumption for Spain. The positive effect of a reduction in social contributions paid by firms on the trade balance crucially depends on the elasticity of substitution between domestic and imported tradeables.

The remainder of the paper is organized as follows. Section 2 describes the underlying theoretical model with a focus on the general Armington setup introduced by Feenstra, Luck, Obstfeld, and Russ (2014). Section 3 discusses identification, outlines adequate estimation techniques and describes the construction of the data set. Section 4 presents the empirical results and Section 5 concludes.

2 The Model

Consider a global economy with J countries and G tradeable goods, where each country j produces a continuum of distinct varieties for each good $g \in \{1, 2 \ldots, G\}$ and firm-level production as well as exporting status are determined endogenously within a Melitz-type model. Countries are allowed to differ in size as well as productivity and are separated by asymmetric trade costs (Chaney 2008).

Goods are differentiated with respect to both place of production (Armington 1969, Broda and Weinstein 2006) and producing firm (Krugman 1980). In line with the relevant literature (Broda and Weinstein 2006; Feenstra 1994; Imbs and Mejean 2010) this paper builds on a multi-country constant elasticity of substitution (CES) demand system, but do not restrict micro and macro Armington elasticities to be equal (Feenstra, Luck, Obstfeld, and Russ 2014). More precisely, I do not assume that consumers substitute between domestic and foreign varieties, say home machinery and German machinery, as readily as between any foreign varieties, say Japanese and German machinery. This ultimately, results in a multi-country CES demand system, with three layers of aggregation instead of the usual two. This general Armington set-up is introduced and discussed in detail by Feenstra, Luck, Obstfeld, and Russ (2014). Sections 2.1 and 2.2 provide a brief summary.

2.1 Preferences, Consumption and Import Demand

Define aggregate consumption C^j of a representative consumer in country j as

$$C^j = \left[\sum_{g=1}^{G} (\alpha_g^j)^{\frac{1}{\eta^j}} (C_g^j)^{\frac{\eta^j - 1}{\eta^j}} \right]^{\frac{\eta^j}{\eta^j - 1}} , \tag{1}$$

where α_g^j denotes an exogenous preference parameter summing to unity and η^j the elasticity of substitution between goods in country j. Consumption of the the g^{th} good is allocated among different varieties, that in turn may be imported or not. In a more general Armington setup as introduced in Feenstra, Luck, Obstfeld, and Russ (2014) consumers are not restricted to substitute between domestic and foreign varieties as readily as between any two imported varieties. They may first choose whether to buy a basket of good g varieties produced domestically, C_g^{jj}, or buy a basket of good g varieties produced abroad, C_g^{Fj}, before they allocate their consumption among different source countries i and different producing firms, respectively. Consequently, for a random preference weight β_g^j, reflecting a home bias or differences in quality, consumption of the g^{th} good is given by

$$C_g^j = \left[(\beta_g^j)^{\frac{1}{\omega_g^j}} (C_g^{jj})^{\frac{\omega_g^j - 1}{\omega_g^j}} + (1 - \beta_g^j)^{\frac{1}{\omega_g^j}} (C_g^{Fj})^{\frac{\omega_g^j - 1}{\omega_g^j}} \right]^{\frac{\omega_g^j}{\omega_g^j - 1}} , \tag{2}$$

where C_g^{jj} equals domestic consumption and likewise C_g^{Fj} equals foreign consumption. The parameter ω_g^j denotes the *macro Armington substitution elasticity* between home and foreign varieties of good g for country-j residents, which is assumed to exceed unity. Note, that the generalization of C_g^{ij} to C_g^{Fj} directly follows from assuming CES-preferences.[1] Finally, for a random preference

[1] Demand for the g^{th} good or equivalently consumption of the g^{th} good supplied by country i might as well be interpreted as the demand for g^{th} good supplied by i^{th} group of countries (Armington 1969). This

weight κ_g^{ij} foreign consumption in country j is obtained by aggregating over all i source countries importing to country j,

$$C_g^{Fj} = \left[\sum_{i=1, i \neq j}^{J} (\kappa_g^{ij})^{\frac{1}{\sigma_g^j}} (C_g^{ij})^{\frac{\sigma_g^j - 1}{\sigma_g^j}} \right]^{\frac{\sigma_g^j}{\sigma_g^j - 1}} , \tag{3}$$

where C_g^{ij} equals a basket of good g varieties produced in source country i exported to country j. The parameter σ_g^j denotes the *micro Armington substitution elasticity* between different foreign varieties of good g for country-j residents, which is assumed to exceed unity.[2] Assuming that σ_g^j also governs consumers' choice among different varieties φ produced by different firms within a country, C_g^{ij} is given by

$$C_g^{ij} = \left[\int_{N_g^{ij}} (c_g^{ij}(\varphi)^{\frac{\sigma_g^j - 1}{\sigma_g^j}} d\varphi) \right]^{\frac{\sigma_g^j}{\sigma_g^j - 1}} , \forall i, \tag{4}$$

that is an integral over the set of exported varieties, indicated by its measure N_g^{ij}[3]. By analogy with the CES consumption indices in Eqs. (1) to (3) the corresponding CES price indices are given by

$$P^j = \left[\sum_{g=1}^{G} (\alpha_g^j)^{\frac{1}{\eta^j}} (P_g^j)^{1-\eta^j} \right]^{\frac{1}{1-\eta^j}} , \tag{5}$$

$$P_g^j = \left[(\beta_g^j)(P_g^{jj})^{1-\omega_g^j} + (1-\beta_g^j)(P_g^{Fj})^{1-\omega_g^j} \right]^{\frac{1}{1-\omega_g^j}} , \text{ and} \tag{6}$$

$$P_g^{Fj} = \left[\sum_{i=1, i \neq j}^{J} (\kappa_g^{ij})(P_g^{ij})^{1-\sigma_g^j} \right]^{\frac{1}{1-\sigma_g^j}} . \tag{7}$$

If per unit-costs of trade follow a standard iceberg notation (Samuelson 1952), such that only a fraction $\frac{1}{\tau_g^{ij}} < 1$ of shipments from source country i actually arrives in j, and p_g^i denotes the FOB (free on board) price of a variety of good g produced in source country i, CIF (cost, insurance, freight) prices are derived as $\tau_g^{ij} p_g^i$. Consequently, the price index P_g^{ij} for varieties imported from

flexible interpretation is allowed whenever the following two conditions hold: First, the marginal rate of substitution between any two products C_g^{aj} and C_g^{bj} in the g^{th} good market is independent of demand for any other products competing in the market for the g^{th} good. Secondly, the function on the C_g^{ij}s is linear and homogeneous. While the first condition ensures that consumers' budget constraints do not affect the relative valuation of goods, the latter ensures that market shares do not depend on market size but only on relative prices. Both conditions hold for CES-preferences.

[2]Note, this assumption is necessary to establish a model of monopolistic competition. Unless the elasticity of substitution exceeds unity, mark-ups on marginal costs cannot not be established.

[3]Less formally, N_g^{ij} equals the endogenously defined interval of exporting firms in country i.

i to j is

$$P_g^{ij} = \left[\int_{N_g^{ij}} (\tau_g^{ij} p_g^i(\varphi)^{\sigma_g^j - 1} d\varphi) \right]^{\frac{1}{1-\sigma_g^j}} \quad , \tag{8}$$

with $\tau_g^{ij} = 1$ for $i = j$, that is in case of domestic sales. Given the preceding preference set-up in Eqs. (1) to (4), along with the corresponding price indices Eqs. (5) to (8) one can solve consumers' optimization problem and arrive at the following CES demand functions for foreign products, Y_g^{ij}, and domestic products, Y_g^{jj}:

$$Y_g^{ij} = \alpha_g^j (1 - \beta_g^j) \kappa_g^{ij} \left(\frac{P_g^{ij}}{P_g^{Fj}} \right)^{-\sigma_g^j} \left(\frac{P_g^{Fj}}{P_g^j} \right)^{-\omega_g^j} \left(\frac{P_g^j}{P^j} \right)^{-\eta_g^j} C^j \tag{9}$$

$$Y_g^{jj} = \alpha_g^j \beta_g^j \left(\frac{P_g^{jj}}{P_g^j} \right)^{-\omega_g^j} \left(\frac{P_g^j}{P^j} \right)^{-\eta_g^j} C^j \tag{10}$$

Multiplying Eqs. (9) and (10) by P_g^{ij} and P_g^{jj} respectively, results in the corresponding consumption expenditures denominated in some currency, i.e., foreign sales V_g^{ij} and domestic sales V_g^{jj},

$$V_g^{ij} = \alpha_g^j (1 - \beta_g^j) \kappa_g^{ij} \left(\frac{P_g^{ij}}{P_g^{Fj}} \right)^{1-\sigma_g^j} \left(\frac{P_g^{Fj}}{P_g^j} \right)^{1-\omega_g^j} \left(\frac{P_g^j}{P^j} \right)^{1-\eta_g^j} P^j C^j \text{ , and} \tag{11}$$

$$V_g^{jj} = \alpha_g^j \beta_g^j \left(\frac{P_g^{jj}}{P_g^j} \right)^{1-\omega_g^j} \left(\frac{P_g^j}{P^j} \right)^{1-\eta_g^j} P^j C^j \text{ ,} \tag{12}$$

which is crucial for estimation real consumption in units is not observable. From Eqs. (11) and (12) it should be clear how both foreign sales V_g^{ij} and domestic sales V_g^{jj} of country-j citizens for good g varieties depend on overall consumption and relative prices.

2.2 Production and Productivity

Recall each country i produces a set of different varieties φ for each good g, where labor is the only factor of production. Each variety φ in turn, is produced by a single but heterogeneous firm, that differs in terms of productivity and may be indexed by φ. Exporting from i to j is associated with fixed costs, f_g^{ij}. A firm φ in i that exports the amount $y_g^{ij}(\varphi)$ to j thus faces the unit-labor requirement,

$$l_g^{ij}(\varphi) = \frac{y_g^{ij}(\varphi)}{A_g A^i \varphi} + f_g^{ij} \text{ ,} \tag{13}$$

where A_g represents a good-specific and A^i a country-specific productivity shock. Assuming fixed costs to exporting as in Melitz (2003) leads to a partition of firms by export status, where only the most productive ones enter the export market and the cut-off productivity level can be determined endogenously. Regardless of exporting status, monopolistic competition as such allows each firm φ in i to charge a f.o.b. price,

$$p_g^i(\varphi) = \frac{\sigma_g^i}{\sigma_g^i - 1}\left(\frac{W^i}{A_g A^i \varphi}\right) \ , \tag{14}$$

above marginal costs, with W^i being the wage in country i denoted in some global numeraire.[4] Thus, exporter revenues $\pi_g^{ij}(\varphi)$ are $p_g^i(\varphi) y_g^{ij}(\varphi)/\sigma_g^j$ and given Eq. (13) equal fixed costs at the cut-off productivity level $\hat{\varphi}$:[5]

$$\begin{aligned}\pi_g^{ij}(\hat{\varphi}) &= \frac{p_g^i(\hat{\varphi})}{\sigma_g^i}\kappa_g^{ij}\left[\alpha_g^j(1-\beta_g^j)\kappa_g^{ij}\left(\frac{\tau_g^{ij} p_g^i(\hat{\varphi})}{P_g^{Fj}}\right)^{-\sigma_g^j}\left(\frac{P_g^{Fj}}{P_g^j}\right)^{-\omega_g^j}\left(\frac{P_g^j}{P_g}\right)^{-\eta_g^j} C^j\right] \\ &= W^i f_g^{ij} \end{aligned} \tag{15}$$

Similar to Eqs. (9) and (10), for $i = j$, that is for domestic sales, $(1-\beta_g^j)\kappa_g^{ij}$ is replaced by β_g^j and P_g^{Fj} by P_g^{jj}. Using the mark-up Eq. (14) the productivity cut-off $\hat{\varphi}_g^{ij}$ can be expressed in terms of variables exogenous to the firm. In particular, $\hat{\varphi}_g^{ij}$ - aside from taste parameters and elasticities - is a function, $f(W^i, C^i, P_g^{Fj}, P_g^j, P_g)$, that depends on variables endogenously defined within the model. Feenstra, Luck, Obstfeld, and Russ (2014) show how to solve for the model's general equilibrium under the assumption that the distribution of producer-specific productivity shocks is Pareto.[6] Informally, using a Pareto specification for firm-level productivity, price indices may be expressed solely in terms of nominal wages and productivity cut-offs, which in turn reduces $\hat{\varphi}_g^{ij}$ to a function, $f(W^i, C^i)$. Using J labour market clearing conditions and $GJ \times J$ cut-off equations one can solve for the unknowns $\{W^i, \hat{\varphi}_g^{ij}\}$. Finally, under balanced trade the J budget constraints give the consumption levels C^i. In line with Melitz (2003) welfare gains materialize via competition in factor markets for scarce labor. As real wages are bid up, the least productive firms incur losses and are forced to exit, which in turn increases aggregate productivity and hence welfare.

[4]Note, that in contrast to Melitz (2003), who assumes identical countries w.r.t nominal wage and trade barriers, the nominal wage level is allowed to vary across countries i. Thus, firm-level reallocations due to nominal wage differences are taken into account.

[5]Note, that the term in brackets in Eq. (15) gives the demand a single firm φ in i faces from j, which is analogue to Eq. (9), and recall that in presence of Iceberg trade costs production y_g^{ij} needs to account for units lost in shipping from i to j in order to ensure market clearing.

[6]The assumption that firm-level productivity is distributed as Pareto is well established in the literature. In particular, Del Gatto, Mion, and Ottaviano (2006) show that overall productivity of firms operating in the EU is well approximated using a Pareto distribution.

3 Estimation and Data

Simple micro Armington substitution elasticities without differentiating between domestic and import goods have been estimated for selected industries or products, such as oil and petroleum products (Balistreri, Al-Qahtani, and Dahl 2010), rice (Huchet-Bourdon and Pishbahar 2009) and forest biomass commodities (Lundmark and Shahrammehr 2011), as well as for selected countries, such as 27 EU Member States (Mohler and Seitz 2012) and 15 OECD countries (Imbs and Mejean 2013). Yet, empirical elasticity estimates give less cause to optimism. A survey by MacDaniel (2003) documents substantial variation in estimates. While macro time-series approaches yield relatively low elasticity estimates, cross-sectoral approaches are promising. Imbs and Mejean (2013) conclude that an aggregation bias explains the elasticity puzzle and that deriving elasticity estimates from sectoral data should be the dominant approach. Furthermore, Feenstra (1994) point out identification problems, heteroscedasticity and endogeneity issues as well as sensitivity to instrument choice in IV estimation. They propose an IV-GMM approach based upon Hansen (1982) as a baseline approach. Soderbery (2009) studies asymptotic properties in estimating substitution elasticities. Soderbery (2010) provides an application with respect to estimating trade elasticities.[7] Given the challenge of identification, endogeneity and heteroscedasticity Armington elasticities are estimated using non-linear IV-GMM estimation techniques following Feenstra, Luck, Obstfeld, and Russ (2014). Section 3.1 discusses estimation equations and provides a brief summary of the IV-GMM approach. Section 3.2 explains the construction of a new data set combining both bilateral trade data and production data, which is essential for estimation of micro and macro elasticities.

3.1 Identification

Given Eqs. (11) and (12), foreign sales are obtained from source country i in country j in terms of domestic sales of good g,

$$\frac{V_{gt}^{ij}}{V_{gt}^{jj}} = \kappa_{gt}^{ij} \frac{(1-\beta_{gt}^{j})}{\beta_{gt}^{j}} \left(\frac{P_{gt}^{ij}}{P_{gt}^{Fj}}\right)^{1-\sigma_g^j} \left(\frac{P^{Fj}}{P^{jj}}\right)^{1-\omega_g^j} , \tag{16}$$

with time index t and CES-price indices as in Eqs. (7) and (8). From Eq. (16) the structural parameters σ_g^j and ω_g^j can be identified. However, as CES-price indices are not observable, empirical applications use unit-values UV_{gt}^{jj} and UV_{gt}^{ij} instead, which are defined as consumption weighted averages of prices. Hence, the inter-temporal import price index of UV_{gt}^{ij} used in the empirical application is given by,

$$\frac{UV_{gt}^{ij}}{UV_{gt-1}^{ij}} = \frac{P_{gt}^{ij}}{P_{gt-1}^{ij}} \left(\frac{N_{gt}^{ij}}{N_{gt-1}^{ij}}\right)^{\frac{1}{(\sigma_g^j-1)}} , \tag{17}$$

[7]For a review of particular problems in deriving Armington elasticities refer to Saito (2004).

and the corresponding inter-temporal multilateral import index of UV_{gt}^{Fj} is measured by a geometric average[8],

$$\frac{UV_{gt}^{Fj}}{UV_{gt-1}^{Fj}} = \prod_{i=1,i\neq j}^{J} \left(\frac{UV_{gt}^{ij}}{UV_{gt-1}^{ij}}\right)^{w_{gt}^{ij}} = \frac{P_{gt}^{Fj}}{P_{gt-1}^{Fj}} \left(\frac{\kappa_{gt}^{Fj} N_{gt}^{Fj}}{\kappa_{gt-1}^{Fj} N_{gt-1}^{Fj}}\right)^{\frac{1}{(\sigma_g^j - 1)}} , \tag{18}$$

where the weights w_{gt}^{ij} are computed by using relative import shares s_{gt}^{ij} in the tradition of Sato-Vartia ideal log-change index numbers (Sato 1976, Vartia 1976)[9] :

$$w_{gt}^{ij} \equiv \frac{\left(\frac{s_{gt}^{ij} - s_{gt-1}^{ij}}{ln(s_{gt}^{ij}) - ln(s_{gt-1}^{ij})}\right)}{\sum_{i=1,i\neq j}^{J} \left(\frac{s_{gt}^{ij} - s_{gt-1}^{ij}}{ln(s_{gt}^{ij}) - ln(s_{gt-1}^{ij})}\right)} \text{ , with } s_{gt}^{ij} \equiv \frac{P_{gt}^{ij} C_{gt}^{ij}}{\sum_{i=1,i\neq j}^{J} P_{gt}^{ij} C_{gt}^{ij}} \tag{19}$$

Using unit values UV_{gt}^{ij} and corresponding aggregates UV_{gt}^{Fj} in Eq. (16) induces measurement error as can be seen from Eqs. (17) and (18).[10] Thus, the first difference of the identifying equation (16) in logs is for all $i \neq j$ and $t = 1, \ldots, T$,

$$\Delta ln \left(\frac{V_{gt}^{ij}}{V_{gt}^{jj}}\right) = -(\sigma_g^j - 1) \Delta ln \left(\frac{UV_{gt}^{ij}}{UV_{gt}^{Fj}}\right) + (1 - \omega_g^j) \Delta ln \left(\frac{UV_{gt}^{Fj}}{UV_{gt}^{jj}}\right) + \varepsilon_{gt}^{ij} , \tag{20}$$

with an error term comprising exogenous changes in taste as well as endogenous changes in variety,

$$\varepsilon_{gt}^{ij} = \Delta ln \left(\frac{\kappa_{gt}^{ij}}{\kappa_{gt}^{Fj}}\right) + \Delta ln \left(\frac{N_{gt}^{ij}}{N_{gt}^{Fj}}\right) + \Delta ln \frac{(1 - \beta_{gt}^j)}{\beta_{gt}^j} - \frac{(1 - \omega_g^j)}{(\sigma_g^j - 1)} \Delta ln \left(\frac{\kappa_{gt}^{Fj} N_{gt}^{Fj}}{N_{gt}^{jj}}\right) . \tag{21}$$

Given Eq. (21), estimating Eq. (20) by Ordinary Least Squares (OLS) will generally result in biased estimates of σ_g^j and ω_g^j. Feenstra, Luck, Obstfeld, and Russ (2014) provide a detailed discussion on the source and nature of the bias. In order to tackle these endogeneity issues they propose an IV-GMM framework, which I will briefly outline.

From Eqs. (19), (20) and (21) one obtains relative import demand as a function of relative prices and relative demand shocks ε_{gt}^{iF} due to changes in taste or variety,

$$\Delta ln \left(\frac{V_{gt}^{ij}}{V_{gt}^{Fj}}\right) = -(\sigma_g^j - 1) \Delta ln \left(\frac{UV_{gt}^{ij}}{UV_{gt}^{Fj}}\right) + \varepsilon_{gt}^{iF} \text{ , with } \varepsilon_{gt}^{iF} = \Delta ln \left(\frac{\kappa_{gt}^{ij}}{\kappa_{gt}^{Fj}}\right) + \Delta ln \left(\frac{N_{gt}^{ij}}{N_{gt}^{Fj}}\right) , \tag{22}$$

[8]The geometric average ensures that only relative and not absolute price changes affect consumers' choice.

[9]Sato (1976) shows, that a CES preference ordering corresponds to the ideal log-change index. For a multi-level CES preference ordering as outlined in Section 2.1 the ideal log-change index is even consistent in aggregation, which does not hold for the general case (Vartia 1976).

[10]While CES-price indices, as defined in Feenstra (1994), by construction decrease with an expansion in the set of varieties, unit values are adversely effected. More precisely, the entry of less efficient firms - in response to an increase in demand - raises average prices and consequently unit values (Feenstra, Luck, Obstfeld, and Russ 2014).

and define the corresponding reduced-form supply curve with supply shocks δ_{gt}^{iF} as,

$$\Delta ln\left(\frac{UV_{gt}^{ij}}{UV_{gt}^{Fj}}\right) = \rho_{1g}^{j}\frac{\varepsilon_{gt}^{iF}}{(\sigma_g^j - 1)} + \delta_{gt}^{iF} \tag{23}$$

for all $i \neq j$ and $t = 1, \ldots, T$, where $0 < \rho_{1g}^{j} \leqslant 1$ is an OLS coefficient.[11] It is worth noting, that both shocks are already assumed to be independent across source countries and over time by construction, i.e., $\sum_t \sum_{i\neq j} \varepsilon_{gt}^{iF}\delta_{gt}^{iF} = 0$. Nevertheless, Feenstra, Luck, Obstfeld, and Russ (2014) propose an even stronger moment condition:

Moment Condition 1 (MC1) *Uncorrelated Supply and Demand Shocks*

$$\mathbb{E}\left(\sum_t \varepsilon_{gt}^{iF}\delta_{gt}^{iF}\right) = 0 \text{ , for all } i \neq j \tag{24}$$

MC1 assumes that supply and demand shocks are uncorrelated over time for *each* source country i. Finally, the system of Eqs. (22) and (23) along with the $J-1$ moment conditions for each good from (24) results in the following micro equation for estimation[12] for all $i \neq j$ and $t = 1, \ldots, T$,

$$\begin{aligned} Y_{gt}^{iF} &= \theta_{1g}X_{1gt}^{iF} + \theta_{2g}X_{2gt}^{iF} + u_{gt}^{iF} \text{ , with} \\ Y_{gt}^{iF} &= \left[\Delta ln\left(UV_{gt}^{ij}/UV_{gt}^{Fj}\right)\right]^2 \text{ , } X_{1gt}^{iF} = \left[\Delta ln\left(V_{gt}^{ij}/V_{gt}^{Fj}\right)\right]^2 \text{ , } X_{2gt}^{iF} = \sqrt{Y_{gt}^{iF}X_{1gt}^{iF}} \text{ ,} \\ u_{gt}^{iF} &= \frac{\varepsilon_{gt}^{iF}\delta_{gt}^{iF}}{(\sigma_g^j-1)(1-\rho_{1g}^j)} \text{ , } \theta_{1g} = \frac{\rho_{1g}^j}{(\sigma_g^j-1)^2(1-\rho_{1g}^j)} \text{ , and } \theta_{2g} = \frac{(2\rho_{1g}^j-1)}{(\sigma_g^j-1)(1-\rho_{1g}^j)} \text{ ,} \end{aligned} \tag{25}$$

where reduced form coefficients θ_{1g} and θ_{2g} are non-linear functions of the structural parameters σ_g^j and the micro supply elasticity ρ_{1g}^j. Given consistent estimates $\hat{\theta}_{1g}$ and $\hat{\theta}_{2g}$ elasticity estimates $\hat{\sigma}_g^j$ are obtained either indirectly by solving quadratic equations as in Feenstra (1994) or directly via non-linear estimation. However, the error term in Eq. (25) is still correlated with the explanatory variables. Feenstra, Luck, Obstfeld, and Russ (2014) suggest using $l = J - 2$ source country indicators as instrumental variables $z_1, ..., z_l$ in non-linear IV-GMM estimation. The rank condition is a necessary and sufficient condition for the source country indicators to be valid instruments (Davidson and MacKinnon 2004). This condition is fulfilled, whenever there are some differences across source countries in either the supply, or the demand shocks as shown by Feenstra (1991, 1994).[13] Technically, I proceed as follows: I manually perform first stage regressions for each good g by simply averaging the variables Y_{gt}^{iF},X_{1gt}^{iF} and X_{2gt}^{iF} in the estimation equation from Eq. (25) over time for each source country, which results in T_g^i source country-specific time averages to be used

[11] Otherwise the interpretation of (23) as a reduced-form supply curve would not be sensible.

[12] The estimation equation follows from rearranging Eqs. (22) and (23).

[13] For a more general discussion of identification through heteroscedasticity in simultaneous equation models see Rigobon (2003).

as fitted values in second stage regressions, i.e., as many source country-specific fitted values from first stage regressions as (differenced) source country observations.[14] Consequently, the second stage regressions can be performed simply by weighted non-linear GMM estimation, where source country specific time averages, are weighted by T_g^i. For the case of over-identification $l > 2$, the system (25) can no longer be solved analytically. Thus, I choose $\hat{\sigma}_g^j$ and $\hat{\rho}_{1g}^j$ in non-linear IV-GMM estimation to minimize the distance from a $J-1$ vector of moment conditions $g_J(\sigma_g^j, \rho_{1g}^j)$ to zero, where the distance is measured by $Q_J(\sigma_g^j, \rho_{1g}^j) = g_J(\sigma_g^j, \rho_{1g}^j)' W g_J(\sigma_g^j, \rho_{1g}^j) = \sum_{i=1, i \neq j}^{J} w_{ii} g_i(\sigma_g^j, \rho_{1g}^j)^2$, and W is a $(J-1) \times (J-1)$ diagonal weight matrix. For 1-step GMM estimation the errors are assumed to be i.i.d., i.e. that W is proportional to the identity matrix. For efficient 2-step GMM estimation an optimal weight matrix S^{-1} is used as proposed in Hansen (1982) with diagonal elements s_{ii} equal to the variance of the moment conditions, thus allowing for heteroscedasticity of unknown form, and off-diagonal elements zero.[15] The optimal weight matrix is estimated by $\hat{S}^{-1}$ with diagonal element $s_{ii} = 1/N \sum_{i=1}^{N} \hat{u}_i^2 z_i' z_i$ with $N = \sum_{i=1, i \neq j}^{J} T_g^i$, and $\hat{u}$ being the residuals from 1-step GMM estimation. Off-diagonal elements are again zero. Like for 1-step GMM estimation, in 2-step GMM estimation the second stage results can be obtained simply by weighted non-linear GMM estimation, where fitted values from the first stage are weighted by $T_g^i / \sigma_{\hat{u}}^2$.

While for estimating micro elasticities identification is achieved by heteroscedasticity across importing countries (Feenstra 1994, Imbs and Mejean 2010), I rely on heteroscedasticity across goods for macro elasticities (Feenstra, Luck, Obstfeld, and Russ 2014). Rewriting Eq. (20) and denoting demand shocks by ε_{gt}^{ij} gives,

$$\Delta ln \left(\frac{UV_{gt}^{ij}}{UV_{gt}^{Fj}} \right) = \frac{1}{(\sigma_g^j - 1)} \Delta ln \left(\frac{V_{gt}^{ij}}{V_{gt}^{jj}} \right) - \frac{(\omega_g^j - 1)}{(\sigma_g^j - 1)} \Delta ln \left(\frac{UV_{gt}^{Fj}}{UV_{gt}^{jj}} \right) + \frac{\varepsilon_{gt}^{ij}}{(\sigma_g^j - 1)} \ . \tag{26}$$

Define the corresponding reduced-form equation with demand shock δ_{gt}^{ij} as,

$$\Delta ln \left(\frac{UV_{gt}^{ij}}{UV_{gt}^{Fj}} \right) = \rho_{1g}^j \frac{\varepsilon_{gt}^{ij}}{(\sigma_g^j - 1)} - \rho_{2g}^j \frac{(\omega_g^j - 1)}{(\sigma_g^j - 1)} \Delta ln \left(\frac{UV_{gt}^{Fj}}{UV_{gt}^{jj}} \right) + \delta_{gt}^{ij} \ , \tag{27}$$

for all $i \neq j$ and $t = 1, ..., T$, where $\rho_{1g}^j, \rho_{2g}^j > 0$. Similar to MC1 the macro elasticities are derived assuming that demand and supply shocks are uncorrelated for each source country i.

Moment Condition 2 (MC2) *Uncorrelated Supply and Demand Shocks*

$$\mathbb{E} \left(\sum_t \varepsilon_{gt}^{ij} \delta_{gt}^{ij} \right) = 0 \ , \ \textit{for all } i \neq j \tag{28}$$

[14]Note, that the error terms of the source country-specific time averages, i.e. the error terms of the second stage, are themselves source country-specific time averages and thus can be interpreted as the sample analogues of MC1.

[15]The latter assumption implies that moment conditions are not correlated across source countries.

Yet, while MC1 corresponds to a system where home demand is differenced out, MC2 refers to a system with home demand. Finally, the system of Eqs. (26) and (27) results in the following macro-estimation equation for all $i \neq j$ and $t = 1, \ldots, T$,

$$\begin{aligned} Y_{gt}^{iF} &= \sum_{n=1}^{2} \theta_{ng} X_{ngt}^{ij} + (\omega_g^j - 1)^2 \theta_{3g} X_{3gt}^{ij} + \sum_{n=4}^{5} (\omega_g^j - 1) \theta_{ng} X_{ngt}^{ij} + u_{gt}^{ii} \text{ , with} \\ Y_{gt}^{iF} &= \left[\Delta ln \left(UV_{gt}^{ij} / UV_{gt}^{Fj} \right) \right]^2 \text{ , } X_{1gt}^{ij} = \left[\Delta ln \left(V_{gt}^{ij} / V_{gt}^{jj} \right) \right]^2 \text{ , } X_{2gt}^{ij} = \sqrt{Y_{gt}^{iF} X_{1gt}^{ij}} \text{ ,} \\ X_{3gt}^{ij} &= \left[\Delta ln \left(UV_{gt}^{Fj} / UV_{gt}^{jj} \right) \right]^2 \text{ , } X_{4gt}^{ij} = \sqrt{Y_{gt}^{iF} X_{3gt}^{ij}} \text{ , } X_{5gt}^{ij} = \sqrt{X_{1gt}^{ij} X_{3gt}^{ij}} \text{ ,} \end{aligned} \tag{29}$$

where reduced form coefficients $\theta_{1g}, ..., \theta_{5g}$ are again non-linear functions of the structural parameters σ_g^j, ρ_{1g}^j, ω_g^j, and the macro supply elasticity ρ_{2g}^j. According to Feenstra, Luck, Obstfeld, and Russ (2014) X_{3gt}^{ij} and X_{4gt}^{ij} in Eq. (29) do not exhibit asymptotically meaningful variation across source countries i. In line with their approach, GMM estimates are obtained for a subset of goods $g \in P \subset G$ (product pool), for which I assume $\omega_g^j = \omega_P^j$ and $\rho_{2g}^j = \rho_{2P}^j$. I use source country indicators interacted with good indicators as $l = |P|\,(J-2)$ instruments $z_1, ..., z_l$ in non-linear IV-GMM estimation, where $|\cdot|$ stands for the cardinality of a set, i.e., the number of its elements. Specifically, I proceed as I did for estimating the micro elasticities: I manually perform first stage regressions for each subset P by simply averaging the variables Y_{gt}^{iF},X_{1gt}^{ij} to X_{5gt}^{ij} in Eq. (29) over time for each source country and good combination, which results again in T_g^i source country-specific time averages to be used as fitted values in second stage regressions. For computational reasons the parameters σ_g^j and ρ_{1g}^j are obtained in a sequential procedure. Again, the second stage regressions can be performed simply by weighted non-linear GMM estimation, where source country-specific time averages are weighted by T_g^i. I choose $\hat{\omega}_P^j$ and $\hat{\rho}_{2P}^j$ in non-linear IV-GMM estimation to minimize the distance from a $|P|\,(J-1)$ vector of moment conditions $g_P(\sigma_g^j, \rho_{1g}^j, \omega_P^j, \rho_{2P}^j)$ to zero, where the distance is measured by $Q_P(\sigma_g^j, \rho_{1g}^j, \omega_P^j, \rho_{2P}^j) = g_P(\sigma_g^j, \rho_{1g}^j, \omega_P^j, \rho_{2P}^j)' W g_P(\sigma_g^j, \rho_{1g}^j, \omega_P^j, \rho_{2P}^j) = \sum_{i=1, i \neq j}^{\#P(J)} w_{ii} g_i(\sigma_g^j, \rho_{1g}^j, \omega_P^j, \rho_{2P}^j)^2$, and W is a $|P|\,(J-1) \times |P|\,(J-1)$ diagonal weight matrix. For efficient 2-step GMM estimation the optimal weight matrix is $\hat{S}^{-1}$ with diagonal element $s_{ii} = 1/N \sum_{i=1}^{N} \hat{u}_i^2 z_i' z_i$ with $N = \sum_{g=1}^{|P|} \sum_{i=1, i \neq j}^{J} T_g^i$, and $\hat{u}$ being the residuals from 1-step GMM estimation. Off-diagonal elements are again zero. Hence, I allow for heteroscedasticity of unknown form across source country and good combinations.

Feenstra, Luck, Obstfeld, and Russ (2014) show that aggregation over countries adds additional information to Eq. (29). Equation (11) aggregated over source countries together with Eq. (12) results in aggregate relative import demand as a function of relative prices and relative demand shocks ε_{gt}^{Fj},

$$\Delta ln \left(\frac{V_{gt}^{Fj}}{V_{gt}^{jj}} \right) = (1-\omega_g^j) \Delta ln \left(\frac{UV_{gt}^{Fj}}{UV_{gt}^{jj}} \right) + \frac{\varepsilon_{gt}^{Fj}}{(\sigma_g^j - 1)} \text{ , with}$$

$$\varepsilon_{gt}^{Fj} = \Delta ln \left(\frac{(1-\beta_t^j)}{\beta_t^j} \right) + \frac{(\omega^j - a)}{(\sigma_g^j - 1)} \left[\Delta ln(\kappa_{gt}^{Fj}) + \Delta ln \left(\frac{N_{gt}^{Fj}}{N_{gt}^{jj}} \right) \right] . \tag{30}$$

Define the corresponding reduced-form "macro" supply curve with supply shocks as δ_{gt}^{Fj},

$$\Delta ln \left(\frac{UV_{gt}^{Fj}}{UV_{gt}^{jj}} \right) = \rho_F^j \frac{\varepsilon_{gt}^{Fj}}{(\omega_g^j - 1)} + \delta_{gt}^{Fj} \ , \tag{31}$$

for all $i \neq j$ and $t = 1, \ldots, T$ with $0 < \rho_F^j < 1$. Assume as an additional moment condition that aggregate demand and supply errors are uncorrelated across all goods.

Moment Condition 3 (MC3) *Uncorrelated Aggregate Supply and Demand Shocks*

$$\mathbb{E} \left(\sum_t \varepsilon_{gt}^{iF} \delta_{gt}^{iF} \right) = 0 \text{ , for all } g \tag{32}$$

Finally, from Eqs. (30) and (31) an aggregate "macro" estimation equation can be derived for all g and $t = 1, \ldots, T$,

$$\begin{aligned} Y_{gt}^{Fj} &= \phi_1 X_{1gt}^{Fj} + \phi_{2g} X_{2gt}^{Fj} + u_{gt}^{Fj} \text{ , with} \\ Y_{gt}^{Fj} &= \left[\Delta ln \left(UV_{gt}^{Fj} / UV_{gt}^{jj} \right) \right]^2 \text{ , } X_{1gt}^{Fj} = \left[\Delta ln \left(V_{gt}^{Fj} / V_{gt}^{jj} \right) \right]^2 \text{ , } X_{2gt}^{Fj} = \sqrt{Y_{gt}^{Fj} X_{1gt}^{Fj}} \text{ ,} \\ u_{gt}^{Fj} &= \frac{\varepsilon_{gt}^{Fj} \delta_{gt}^{Fj}}{(\omega_g^j - 1)(1-\rho_F^j)} \text{ , } \phi_1 = \frac{\rho_F^j}{(\omega_g^j - 1)^2 (1-\rho_F^j)} \text{ , and } \phi_2 = \frac{(2\rho_F^j - 1)}{(\omega_g^j - 1)(1-\rho_F^j)} \text{ ,} \end{aligned} \tag{33}$$

where reduced form coefficients ϕ_1 and ϕ_2 are non-linear functions of the structural parameters ω_g^j and ρ_F^j. $\hat{\omega}_P^j$ and $\hat{\rho}_{FP}^j$ are identified for each subset of goods $g \in P \subset G$ in non-linear IV-GMM estimation simultaneously from Eq. (33) and Eq. (29) along with the cross-equation restriction $\rho_{2g}^j \equiv \rho_{1g}^j / \rho_F^j$. Technically, both the distance from $|P|(J-1)$ moment conditions $g_P(\sigma_g^j, \rho_{1g}^j, \omega_P^j, \rho_{FP}^j)$ from MC2 is minimized as outlined above, and from $|P|$ moment conditions $g_P(\sigma_g^j, \rho_{1g}^j, \omega_P^j, \rho_{FP}^j)$ from MC3. It is worth noting, that I use good indicators as instruments and $\sum_{i=j}^J T_g^i / \sigma_{\hat{u}}^2$ as weights in 2-step GMM estimation for Eq. (33)[16], where $\sigma_{\hat{u}}^2$ is the good-specific average variance across source countries i of 1-step GMM residuals from Eq (29).

Ultimately, the restrictiveness of the moment conditions used in identification should be discussed. The assumption, that different factors shift supply and demand, is advocated by many

[16] Otherwise the additional moment conditions from MC3 would receive practically no weight in simultaneous estimation.

macroeconomic applications, in particular structural vector autoregressions. Thus allowing within source country demand and supply shocks to be pairwise orthogonal as well as across source countries is well in accordance with the relevant literature.[17] Still, these assumptions may be invalid under certain conditions. For example, Enders and Hurn (2007) discuss identification for the case of contemporaneous correlation between aggregate demand and supply shocks in a small open economy. Moreover, Feenstra and Romalis (2012) address the issue of unmeasured quality shifting both supply and demand curves.

[17]Note, that the same type of shock may be correlated across countries.

3.2 Data

Estimating micro and macro elasticities based on the model outlined in the previous section calls for a data set that meets three criteria. First, it has to contain product categories matching with data on domestic production on the one hand and with imports by source country on the other hand. This is required for identification of the macro elasticity ω, which hinges on the distinction between domestically produced consumption (C_g^{jj}) and imported or foreign consumption (C_g^{Fj}). Moreover, matching of production with import data is necessary to obtain unbiased elasticity estimates based on relative consumption shares (Imbs and Mejean 2010). Second, the matching ideally occurs on the most detailed product classification level possible to avoid the downward bias typically found for Armington trade elasticity estimates at high levels of aggregation (Imbs and Mejean 2013, Jovanovic 2013, MacDaniel 2003). Third, the data set should span a reasonably long time period. Using simulation, Feenstra, Luck, Obstfeld, and Russ (2014) show that macro elasticity estimates based on 'relatively long samples' are systematically higher and closer to the true parameter values. Since there is no ready-made data for the EU-15 Member States[18] that meets these requirements, I build up a new data set drawing on two sources: Data on imports to the EU-15 Member States at the Combined Nomenclature (CN) 8-digit level from 50 importing countries (EU-27 and EU-27 Top-23 trading partners) over the period 1995-2012 is taken from EUROSTAT's *Community External Trade Statistics* (COMEXT) database.[19] Data on domestic production at the Prodcom Classification (PC) 8-digit level for the EU-15 Member States over the period 1995-2012 is taken from EUROSTAT's *Production Communautaire* (PRODCOM) database.[20] The 8-digit CN and PC levels are the most detailed product classification levels available for trade and production data of EU Member States, and are comparable to the 10-digit Harmonized System commodities classification by the World Customs Organization (WCO). Although the EUROSTAT CN and PC have been designed to correspond to each other closely, their matching is not straightforward for several reasons:

a) CN and PC comprise different product pools and only a subset of product categories is contained in both classifications. A number of PC headings such as industrial services and intermediate products do not have a corresponding CN heading and vice versa (for some CN headings), which translates into several missing equivalents between 8-digit CN and PC product classifications.

b) The same product category differs between CN and PC with respect to its breakdown into

[18] The term EU-15 refers to the European Union prior to 2004, comprising 15 Member States: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

[19] COMEXT gives detailed statistics on external trade for each EU-15 Member State by type of product and import source.

[20] PRODCOM provides statistics on mining, quarrying and the production of manufactured goods. For an introduction to published PRODCOM data and comparability to COMEXT refer to the Europroms User Guide (Eurostat 2008) and the Quality Report on Prodcom (Eurostat 2013).

lower levels of aggregation. Specifically, several products associated with a single 8-digit PC product code, are classified in greater detail in CN (one spouse with many cross-classification spouses, i.e., one PC product code maps into many CN product codes); several ones are classified in less detail (many spouses with one cross-classification spouse, i.e., many PC product codes map into one CN product code) or classified differently in a multifaceted, less systematic way (many spouses with many cross-classification spouses, i.e., many PC product codes map into many CN product codes) and vice versa (for several CN product codes). Thus, numerous and complex mappings *between* 8-digit CN and PC product codes (many-to-one, one-to-many, and many-to-many) have to be identified and applied in order to obtain a data set that is **consistent between CN and PC product categories**.

c) Both CN and PC product categories, as well as their underlying product pools are subject to changes over time. Several products classified by a single 8-digit product code become classified in greater detail over time (growing family; one product code in t maps into many product codes in $t + 1$); several ones in less detail (shrinking family; many product codes in t map into one product code in $t + 1$); several ones are classified differently in a less systematic way (many product codes in t map into many product codes in in $t + 1$) or vanish at all (product code does not exist any more in $t + 1$).[21] The longer the time series, the more frequently such breaks or changes will occur. Hence, numerous and complex mappings *within* a certain CN or PC product category (many-to-one, one-to-many, and many-to-many) have to be identified and applied to obtain a data set that is **consistent within each product classification over time**.

In a panel data context as ours, the challenge is to identify and apply (one-to-many, many-to-one, and many-to-many) mappings both *between* CN and PC as well as *within* both CN and PC over time in order to obtain a possibly large number of consistent product groups.[22]

Drawing on the pioneering work by Pierce and Schott (2009) for US and Beveren, Bernard, and Vandenbussche (2012) for European data, I aggregate 8-digit CN and PC product codes between CN and PC classifications and within both CN and PC classifications over time. Consistent aggregation is achieved by three steps as suggested in Beveren, Bernard, and Vandenbussche (2012):

a) 'Between Matching' of CN and PC by identifying product groups that are consistent between the product classifications for the final year of the panel (identifying spouses).

b) 'Within Matching' of CN (trade data) and PC (production data) separately by identifying

[21] Most prominent changes occur within PC, which is updated every year. Moreover, there is a structural break as the number of 8-digit PRODCOM product codes was considerably reduced from about $6,000$ to $4,000$ in 2008. Currently there are slightly less than $4,000$ 8-digit product codes.

[22] A product group is referred to as consistent, if it represents a family tree of some mapping *between* PC and CN product categories (e.g., spouses) in the final year, i.e., all product categories contained are either relatives in direct line (e.g., parents and children, etc.), in collateral line (e.g., brothers and sisters, etc.) or related by 'marriage' (e.g., mother-in-law, brother-in-law, etc.)

product groups that can be traced within each product classification (data set) over time (identifying each spouse's family, i.e., all relatives in direct and collateral line).

c) 'Family Tree Matching' by identifying consistent product groups between CN and PC as well as over time by using each mapping between CN and PC codes in the final year to trace back the product group family tree within each data set (identifying the spouses' family members related in direct line, collateral line, or by 'marriage').

Following the outlined procedure for 9854 CN and 6924 PC 8-digit codes over the period 1995-2012, I obtain $2,662$ (synthetic) product groups that are consistent between the two database classifications and over time. Figure 4 in Appendix A.1 provide examples of such consistent product groups. It is important to note that these $2,662$ synthetic, consistent product groups are still on a highly disaggregated level. For example, the median number of original 8-digit CN and PC codes *respectively* per consistent product group (i.e., median family and family-in-law size respectively) is 2 and the median number of both original 8-digit PC *and* CN codes per consistent product group (i.e., median family size) amounts to 4.[23]

In a next step, I use COMEXT and PRODCOM data published in COMEXT (Europroms data)[24] to set up a panel for the EU-15 Member States[25] over the period 1995-2012, comprising as variables domestic production, total exports, as well as imports by source country for (up to) $2,662$ consistent product groups. This yields, for each country, a total of (up to) $47,916$ annual observations on aggregate variables such as total exports and domestic production, and (up to) $2,395,800$ annual observations for the bilateral variable, namely imports by (consistent product groups and) 50 source countries.[26] The $2,662$ product groups that could be consistently matched cover on average 68% of production and (conditional upon the set of source countries) 59% of trade.[27]

Domestically produced consumption sold (V_g^{jj}) is calculated as the difference between total production sold and total exports. Prices are approximated by unit values, calculated as ratio of nominal values to quantities reported. Nominal values are expressed in ECU, quantities are measured in kilograms (net weight concept).[28] Imports are reported as CIF (cost, insurance, freight); exports are reported as FOB (free on board).

[23]For more details, see Tables 10, 11, and 12 in Appendix A.2.

[24]Published PRODCOM data matched with external trade data are also referred to as Europroms data.

[25]Belgium and Luxembourg are treated as aggregate, since separate trade data for Belgium and Luxembourg is available only as of 1999 (Commission 2005).

[26]For $2,649$ out of $2,662$ consistent product groups, at least one yearly value for the period 1995-2012 for import or production data was reported for all EU-15 Member States. Note that zero reported values may also be due to confidentiality issues and reporting thresholds. When aggregating CN and PC commodities within a consistent product group, final values were set zero only when all reported values in each CN and PC product category respectively were reported zero.

[27]For details on source countries, the country-specific coverage of total production and trade (conditional and unconditional on source countries) over the period 1995-2012 see Tables 13, 14 and 15 in Appendix A.2.

[28]For some product categories also a supplementary unit is reported such as, e.g., Carats, Kilowatt Hours, Litre, Square Metre, Cubic Metre, Number of Items, Terajoule. Part of the quantities will be missing when a supplementary unit is collected for intra-trade statistics as from 2006; part of the quantities will

Several import flows are zero; moreover, some countries do not engage in both production and trade for a given year and product category. In addition, for some product categories information on quantities is missing. These cross-country differences in trade frequencies, production structures, reporting thresholds, data availability and quality are particularly problematic for calculating unit values. On average for 55.57% of all yearly observations, ranging from 49.45% (BELU) to 60.73% (IE), UV_{ij} could be calculated using trade data from COMEXT. Likewise, on average for 43.40% of all yearly observations, ranging from 31.53% (UK) to 53.09% (IT), UV_{jj} could be calculated using Europroms data. As a consequence, the number of consistent product groups and trading partners used in the calculations varies across countries and years and the panel data set used in the estimation of Eqs (20), (25), (29), and the system of (29) together with (33) will generally be unbalanced. Moreover, I only use annual observations for which both home production and imports are observed for the given year and thus both micro and macro elasticities can be identified; this further reduces the set of consistent product groups available and introduces additional cross-country variation in the number of consistent product groups used in the estimation in Section 4.

Before turning to the estimation results, some limitations of the data set constructed should be mentioned: It is confined to manufacturing. Despite harmonization efforts there are differences in the quality of survey results at the national level.[29] Finally, in some categories comparisons of production data to external trade statistics may be limited.[30] Yet, these shortcomings are not an artefact of data set construction but will in general apply to any data set using COMEXT and PRODCOM data. For further details see the Quality Report on Prodcom (Eurostat 2013).

be estimates, since - as of 2010 - Member States have to provide quantity estimates when no quantity data is available. For further details see EUROSTAT's Metadata documentation (Eurostat 2015).

[29]Quality issues are predominantly associated with PRODCOM surveys. One main issue are the reporting criteria. Though EUROSTAT demands that at least 90% of industrial activities shall be reported, divergence between the quality of the Statistical Business Registers (SBR) as the source for the sampling frame and the effective enterprise population causes coverage error. EUROSTAT's metadata documentation states that by comparing Member States' Quality Reports the overall coverage error at EU-27 level is estimated below 10%. Further details are given in EUROSTAT's Metadata documentation (Eurostat 2014).

[30]Differences in measurement units between trade and production data, differences in valuation concepts, coverage , and lack of detail can make comparisons across trade and production data difficult. For example, total imports (exports) calculated using COMEXT data differ from total imports (exports) calculated using Europroms data. On average, 11.47% (10.41%) of all yearly observations differ by more than a rounding error but only 6.09% (5.04%) of these observations differ by more than 10% of total imports reported in COMEXT. Consequently, values such as domestically produced consumption V_{gt}^{jj} may become negative for some countries and product categories in some years. Note, that I do not exclude observations with 'implausible' values from the start to avoid possible sample selection issues.

4 Estimation Results

4.1 OLS Estimation

OLS estimates $\hat{\sigma}_g^j$ and $\hat{\omega}_g^j$ are obtained for each consistent product group g from Eq. (20). Despite data on a highly disaggregated level I find median OLS point estimates $\hat{\sigma}_g^j$ and $\hat{\omega}_g^j$ below unity for most countries. Median OLS point estimates for the micro elasticity range between 0.928 (SE) and 1.076 (AT); for the macro elasticity between 0.661 (IT) and 0.896 (IE). Table 1 reports the median point estimate out of all product categories for which elasticity estimates could be identified for each EU-15 country. The reported confidence intervals correspond to the product category with the median point estimate. Table 2 reports corresponding consistent product groups and gives an impression about the level of detail of the consistent product groups used.

Most likely $\hat{\sigma}_g^j$ and $\hat{\omega}_g^j$, identified from equation (20) suffer from omitted variable bias and both may be biased towards zero as argued by (Feenstra, Luck, Obstfeld, and Russ 2014). Still, I find the median $\hat{\omega}_g^j$ to be lower than the median $\hat{\sigma}_g^j$ estimate for each country (except for the Netherlands), giving rise to the presumption that macro elasticities might be lower than micro elasticities. In the absence of any theoretical argument, that the bias would result in systematic differences between ω_g^j and σ_g^j, I interpret these first empirical results as indicative for $\omega_g^j < \sigma_g^j$. However, the confidence intervals overlap in all cases. The confidence intervals reported in Table (1) correspond to the product category with the median point estimate and are based upon the 5^{th} and 95^{th} percentile from $1,000$ stratified bootstrap samples.[31] Consequently, the interval limits are not necessarily located symmetrically around the median point estimates.

The bootstrap technique applied is a non-parametric one. In contrast to classic non-parametric bootstrapping observations are not simply redrawn from the cross-section of different import sources over time, but observations are drawn for each import source separately. This results in as many sub-samples as import sources to sample from and a bootstrap sample for a specific consistent product group, which is a replica of the original data set with respect to trading partners. For an introduction on bootstrapping see Davidson and MacKinnon (2004) or MacKinnon (2006). Throughout this paper bootstrap samples will be obtained by means of such a stratified bootstrap sample, which boils down to resampling observations while fixing trading partners and consistent product groups. Due to structural cross-country differences, as has already been outlined in Section 3.2, only part of the $2,662$ consistent product groups can be potentially used for the estimation of micro and macro elasticities for each country.

[31] For a discussion on the number of bootstraps see Davidson and MacKinnon (2004).

Table 1: Median OLS Estimates of the Micro and Macro Elasticities (EU-15 Member States, 1995-2012)

Country	(1) Micro Elasticity (σ), OLS Estimation		(2) Macro Elasticity (ω), OLS Estimation
	1.076		0.875
AT	[0.712,1.460]		[0.001,1.809]
		266	
	1.034		0.686
BLX	[0.824,1.243]		[0.093,1.075]
		204	
	0.959		0.673
DE	[0.310,1.566]		[-3.755,4.860]
		968	
	0.938		0.832
DK	[0.109,1.616]		[0.781,0.890]
		419	
	1.005		0.888
EL	[0.893,1.124]		[0.091,1.857]
		364	
	0.970		0.870
ES	[0.724,1.215]		[0.737,1.030]
		1007	
	1.053		0.819
FI	[-2.507,2.691]		[-0.943,2.541]
		664	
	0.959		0.808
FR	[0.523,1.228]		[0.069,1.563]
		757	
	0.953		0.896
IE	[0.584,1.201]		[-0.679,3.346]
		167	
	0.956		0.661
IT	[0.667,1.255]		[0.332,0.991]
		1278	
	0.873		0.877
NL	[-3.544,4.274]		[0.181,1.518]
		178	
	0.995		0.839
PT	[0.527,1.108]		[0.258,1.565]
		777	
	0.928		0.717
SE	[0.585,1.294]		[0.374,1.065]
		420	
	1.053		0.887
UK	[-0.036,1.543]		[-0.830,3.044]
		768	

Note: For each country, the first row reports the median OLS estimate for the micro elasticities (σ_g^j) and macro elasticities (ω_g^j) estimates from Equation (20). The number of consistent product groups for which both elasticities could be identified (G_0^j) is given in the third row. Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval around the point estimate for the median product category, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The consistent product groups corresponding to the median estimates are listed in Table 2.

Table 2: Median OLS Elasticity Product Groups (EU-15 Member States, 1995-2012)

	(1) Micro Elasticity (σ), OLS Estimation		(2) Macro Elasticity (ω), OLS Estimation	
Country	Code	PRODCOM Description	Code	PRODCOM Description
AT	25736039	Pressing, stamping or punching tools (excluding for working metal)	23701260	Worked monumental or building stone and articles thereof, of granite
BLX	17211530	Other packaging containers, including record sleeves, n.e.c.	10131180	Pig meat salted, in brine, dried or smoked excluding hams, shoulders and cuts thereof
DE	12001150	Cigarettes containing tobacco or mixtures of tobacco and tobacco substitutes	23523030	Calcined and sintered dolomite, crude, or merely cut into rectangular blocks
DK	24331110	Cold formed sections, obtained from flat products, of non alloy steel, not coated	22292140	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics
EL	22197323	Seals, of vulcanized rubber	14142450	Women's or girls' slips and petticoats (excluding knitted or crocheted)
ES	14141230	Men's or boys' nightshirts and pyjamas, of knitted or crocheted textiles	20414350	Polishes, creams and similar preparations, for the maintenance of woodwork
FI	20164090	Polyesters, in primary forms	23641000	Factory made mortars
FR	13941130	Twine, cordage, rope or cables, of sisal , of jute or other textile bast fibres	10391721	Unconcentrated tomato puree and paste
IE	17231270	Boxes, pouches, wallets and writing compendiums of paper or paperboard	10421030	Margarine and reduced and low fat spreads (excluding liquid margarine)
IT	11011020	Spirits obtained from distilled grape wine or grape marc	20595940	Anti-scaling and similar compounds
NL	10311300	Dried potatoes in the form of flour, meal, flakes, granules and pellets	22212157	Rigid tubes, pipes and hoses of polymers of vinyl chloride
PT	23201459	Refractory ceramic goods, alumina or silica or mixture > 50%: alumina $\geq$ 45%	26702230	Binoculars (including night vision binoculars)
SE	23611150	Tiles, flagstones and similar articles of cement, concrete or artificial stone	17221180	Tablecloths and serviettes of paper pulp, paper, or other cellulose fibres
UK	14141220	Men's or boys' underpants and briefs, of knitted or crocheted textiles	25991127	Baths of iron or steel

Note: Each consistent product group links to a single, original 8-digit PC product category in the final year of the panel, i.e., 2012. Columns (1) and (2) report these original 8-digit PC codes corresponding to the median consistent product groups from Table 1 and their (abridged) description as given in the PRODCOM List 2012.

4.2 GMM Estimation

Compared to OLS estimation, in GMM estimation one is confronted with non-linearity in all estimation equations (25) or (29) and (33). Hence, I choose a modification of the Levenberg-Marquardt (LM) algorithm Moré (1978) as implemented in a R package by Elzhov, Mullen, Spiess, and Bolker (2013) to directly infer parameter estimates. The LM algorithm is a modification of the Gauss-Newton algorithm and gradient descent methods. One advantage of the LM algorithm is its robustness to badly chosen parameter starting values. Another advantage is its fast convergence. Only in parameter regions very close to a minimum the LM algorithm becomes slower. Despite these favourable properties, even the LM algorithm can fail to converge. Still, as many other numerical first order approximations the LM algorithm may fail to identify the global minimum. If estimates from 1-step GMM estimation were negative or did not converge, I did not use them in 2-step GMM estimation. This explains differences in the number of consistent product groups, for which I could identify parameter estimates in 1-step and 2-step GMM estimation.

Turning to the micro elasticities, 1-step and 2-step GMM estimates $\hat{\sigma}_g^j$ are obtained for each consistent product group g from Eq. (25) using MC1 as outlined in Section 3.1. Table 3 reports median results. Apparently, MC1 reduces the bias towards unity present in the OLS estimates. Both median 1-step GMM and 2-step GMM estimates $\hat{\sigma}_g^j$ increase. Median 1-step GMM estimates $\hat{\sigma}_g^j$ range between 3.080 (UK) and 4.227 (IE); median 2-step GMM estimates $\hat{\sigma}_g^j$ range between 3.215 (ES) and 4.243 (DK).

Accounting for heteroscedasticity across source countries results in higher median estimates for all EU-15 countries. Moreover, if I compare 1-step GMM estimates with 2-step GMM estimates the range of estimates across countries decreases and confidence intervals tighten. Thus the 2-step GMM estimator should be preferred. Differences in the number of consistent product groups used in the calculation of 1-step GMM and 2-step GMM confidence intervals in Table 3 arise from the non-linear estimation technique. Note that, differences between the number of product groups in Tables 1 and 3, for which σ_g^j could be identified, are due to differences in the estimation equations (20) and (25).

Compared to other elasticity estimates, the range of our estimates is sensible and in line with theory. Yet, these estimates may still be downward biased due to unmeasured quality. Feenstra and Romalis (2012) show that estimates are substantially higher, if quality-adjusted prices (unit values) are used. However, such data is only available on a more aggregate level.

Given micro elasticities, one can now proceed to the macro elasticities. 1-step (2-step) GMM estimates $\hat{\omega}_P^j$ are obtained for subset of goods $g \in P \subset G$ (product pool) from Eq. (29) using MC2 (from the joint system of Eqs. (29) and (33) using MC2 and MC3) as outlined in Section 3.1. Product pools P are defined as the set of all consistent product groups g, that belong to the same NACE 2-digit industry or simply industry as it will be called for the remainder of the paper. In total, I could identify macro elasticities for 19 industries, though not for each EU-15 Member State. Detailed, country-specific estimates can be found in Tables 17 to 30 in the Appendix B.1.

Table 3: Median GMM Estimates of the Micro Elasticity (EU-15 Member States,1995-2012)

Country	(1) Micro Elasticity (σ), 1-step GMM Estimation	(2) Micro Elasticity (σ), 2-step GMM Estimation
AT	3.139 [2.293,10.882] 244	3.386 [2.218,7.854] 241
BLX	3.644 [1.571,8.891] 183	3.597 [2.012,7.909] 180
DE	3.673 [2.534,7.737] 934	3.685 [2.556,7.321] 921
DK	3.943 [-5.657,11.395] 384	4.243 [2.050,12.788] 375
EL	3.220 [1.709,11.386] 325	3.296 [2.248,8.258] 319
ES	3.190 [2.347,11.656] 887	3.302 [1.945,4.879] 868
FI	3.396 [-3.456,14.764] 593	3.578 [2.478,12.315] 586
FR	3.468 [2.436,16.732] 702	3.606 [2.869,6.038] 694
IE	3.583 [1.765,5.763] 141	3.547 [2.758,8.836] 140
IT	3.475 [2.364,5.508] 1203	3.696 [2.635,8.998] 1192
NL	4.227 [2.825,11.181] 163	4.223 [3.031,8.829] 160
PT	3.168 [2.589,7.227] 680	3.234 [1.891,4.848] 670
SE	3.611 [2.317,7.112] 372	3.703 [2.488,12.19] 364
UK	3.080 [-4.173,5.823] 695	3.215 [2.315,5.364] 683

Note: For each country, the first row reports the median GMM estimate for the micro elasticity (σ_g^j) from Eq. (25) using MC1. The number of consistent product groups for which σ_g^j could be identified is given in the third row. The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners i and consistent product groups g. Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval around the point estimate for the median product category, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). Note, that differences in the number of consistent product groups are a consequence of the non-linear estimation technique.

In contrast to micro elasticities, bootstrap samples are obtained by resampling observations while fixing source countries and consistent product groups within each NACE 2-digit industry.

Accounting for heteroscedasticity leads to mixed results. If one compares 1-step GMM with 2-step GMM estimates, some 2-step GMM estimates $\hat{\omega}_P^j$ increase, some decrease (see Tables (17) to (30)). However, heteroscedasticity is an issue. Only for few NACE 2-digit industries estimates do not change. In line with these results for individual industries, some confidence intervals become tighter, some wider. Yet, similar to the $\hat{\sigma}_g^j$ estimates in Table 3, I find that, on average across countries for 67.19% (60.01%) of the 2-step GMM estimates using MC2 (using MC2 & MC3) the median estimate out of $1,000$ bootstrap samples is higher in magnitude than corresponding 1-step GMM estimates. Moreover, the range of estimates decreases for most countries. In particular, it tightens for 8 (12 using MC2 & MC3) out of 14 countries. In a nutshell, heteroscedasticity across trading partners and consistent product groups in broad NACE 2-digit industries is present but the extent of heteroscedasticity varies across countries and industries. Allowing for considerable heteroscedasticity, as this application does, leads to mixed results for individual industries but increases median estimates and decreases the range of estimates for most countries. Thus, the 2-step GMM estimator should be preferred.

Using Feenstra's additional moment condition MC3 actually increases $\hat{\omega}_P^j$ estimates for most industries and countries. If one compares estimates from Eq. (29) using only MC2 with estimates from the joint system of Eqs. (29) and (33) using MC2 and MC3, most estimates increase. I find that, on average across countries 65.44% (72.78%) of the 1-step GMM (2-step GMM) estimates from the joint system of Eqs. (29) and (33) using MC2 and MC3 are higher than corresponding estimates from Eq. (29) alone using only MC2. For 77.49% (76.86%) of the 1-step GMM (2-step GMM) estimates, when additionally using MC3 the median estimate out of $1,000$ bootstrap samples is higher in magnitude.

As the 2-step GMM approach results in tighter ranges as well as higher median bootstrap estimates (across countries and industries) and the additional moment condition MC3 results in estimates larger in magnitude (again across countries and industries), I prefer the 2-step GMM estimator using both moment conditions MC2 and MC3.

4.3 Bootstrap Tests

In order to judge, whether there is statistically significant difference between micro elasticities σ_g^j and macro elasticities ω_g^j I rely on bootstrap testing as in Feenstra, Luck, Obstfeld, and Russ (2014). One advantage of bootstrap testing is that we can allow for non-normally distributed error terms. For a general discussion on the performance of bootstrap tests compared to asymptotic tests see Davidson and MacKinnon (2004). The basic idea of a bootstrap test is simple. I assume as a null hypothesis $\sigma_g^j \leqslant \omega_g^j$, i.e., that micro elasticites are smaller or equal to macro elasticities. Then, I use a non-parametric bootstrap technique to obtain a sample of $1,000$ replications. Each bootstrap sample is obtained by resampling observations while fixing source countries i and consistent product groups g within a specified industry P. For each bootstrap sample one can now calculate σ_g^j and ω_P^j. In a next step one counts the samples for which $\sigma_g^j \leqslant \omega_P^j$. If one counts less than 5 % of total samples, e.g., 25 samples out of $1,000$, one rejects the null hypothesis at a significance level $\alpha = 5\%$. This means one accepts the alternative hypothesis $\sigma_g^j > \omega_P^j$, i.e. that micro elasticities are significantly higher than macro elasticities. For an introduction on hypothesis testing using bootstrapping see MacKinnon (2006). In case of poor convergence of the non-linear estimation, the 5 % threshold is calculated on the basis of those bootstrap samples, for which the LM algorithm converged.

In total, across countries 53 to 89 % of all consistent product groups, for which both micro and macro estimates could be obtained in 1-step GMM estimation, exhibit a macro elasticity significantly lower than the corresponding micro elasticity. This range slightly drops from 53-89 % to 50-87 % for 2-step GMM estimates, though I observe that both micro and macro median estimates increase. Detailed, country-specific results can be found in Tables 31 to 44 in the Appendix B.2. Table 4 provides a summary for all EU-15 Member States. Across NACE 2-digit industries I observe a similar pattern, though there is more variation than on a country level. In total, I find significantly lower macro elasticities for 28 to 84 % (27 to 90 %) of all consistent product groups, for which both micro and macro elasticities could be obtained in 1-step (2-step) GMM estimation. Table 5 provides a summary for all NACE 2-digit industries. Yet, our findings may be driven by poor convergence of the LM algorithm and or the definition of industries. Hence, I verify the robustness of these results in two ways:

First, I limit the number of non-converging bootstrap samples to 10 %. This reduces the significant share of consistent product groups with $\sigma_g^j > \omega_g^j$ in 1-step GMM estimation, to 27-64 % across countries and to 23-61 % across industries. Decreases are similar for 2-step GMM estimates (see Tables 6 and 7). Detailed, country-specific results are given in Tables 45 to 58 in the AppendixB.5. Second, I use an alternative specification of product pools on a less aggregate level. In particular, I define product pools by NACE 4-digit industries. In total, I could identify macro elasticities for 127 out of 201 subsectors. Again, this reduces the significant share of consistent product groups with $\sigma_g^j > \omega_g^j$ from 53-89 % to 21-62 % across countries and from 28-84 % to 21-62 % across industries (see Tables 8 and 59). Yet, differences in 1-step GMM and 2-step GMM estimation diminish for less broadly defined product pools. These results are in line with the intuitive assumption of smaller product pools being more homogeneous. Finally, I simultaneously limit the number of non-converging samples and use smaller product pools. Across countries, I find significantly lower macro elasticities for 11-45 % (8-46 %) of the consistent product groups considered in 1-step (2-step) GMM estimation (see Table 9). One can observe a similar pattern across industries. The average share of consistent product groups with significantly lower macro elasticites decreases from 40 % to 23 % (see Table 60).

Figures 1, 2 and 3 graphically summarize our results for NACE 4-digit estimates from 2-step GMM estimation using both moment conditions MC1 and MC2. Focussing on these estimates I find significant differences in macro elasticities not only across industries but also across countries by means of a Kruskal-Wallis rank sum test on a 5 % confidence level. Yet, in contrast to cross-sectoral results the boxplots in Figure 2 do not highlight strong differences. These picture changes when focussing on significant differences in micro and macro elasticities in Figure 3. For some countries such as Austria, Greece, Ireland, Sweden or the Netherlands I find less differences in micro and macro elasticities than in others. While for Austria and the Netherlands macro elasticities are relatively high compared to micro elasticities they are considerably lower for Greece and Portugal. Taking the macro elasticity as an indicator for trade shock sensitivity I interpret these results as indicative for the conjecture, that both the absolute and relative size of macro Armington elasticities are of importance in shaping the domestic response to a trade shock as well as the macroeconomic environment.

Table 4: Bootstrap Test Results for EMU-15 (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

	1-step GMM Estimation						2-step GMM Estimation					
Country	Median ω	Median Sector	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Sector	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
AT	1.393	22	242	223	176	72.73	1.303	23	239	230	143	59.83
BLX	1.430	22	182	166	149	81.87	1.503	10	179	164	156	87.15
DE	1.405	17	931	890	833	89.47	1.483	13	918	883	788	85.84
DK	1.143	32	383	339	284	74.15	1.314	17	374	354	317	84.76
EL	1.615	10	324	282	201	62.04	1.700	17	318	293	172	54.09
ES	1.256	25	886	791	691	77.99	1.432	13	867	817	618	71.28
FI	1.586	27	593	522	423	71.33	1.596	32	586	550	397	67.75
FR	1.538	20	701	644	569	81.17	1.381	32	693	661	547	78.93
IE	1.578	10	140	114	74	52.86	1.603	20	139	107	69	49.64
IT	1.506	20	1202	1122	985	81.95	1.217	16	1191	1164	1052	88.33
NL	1.641	10	163	141	114	69.94	1.641	10	160	142	115	71.88
PT	1.510	27	679	608	431	63.48	1.597	15	669	579	368	55.01
SE	1.248	11	372	336	265	71.24	1.550	17	364	343	244	67.03
UK	1.483	10	695	625	572	82.30	1.570	17	683	644	470	68.81

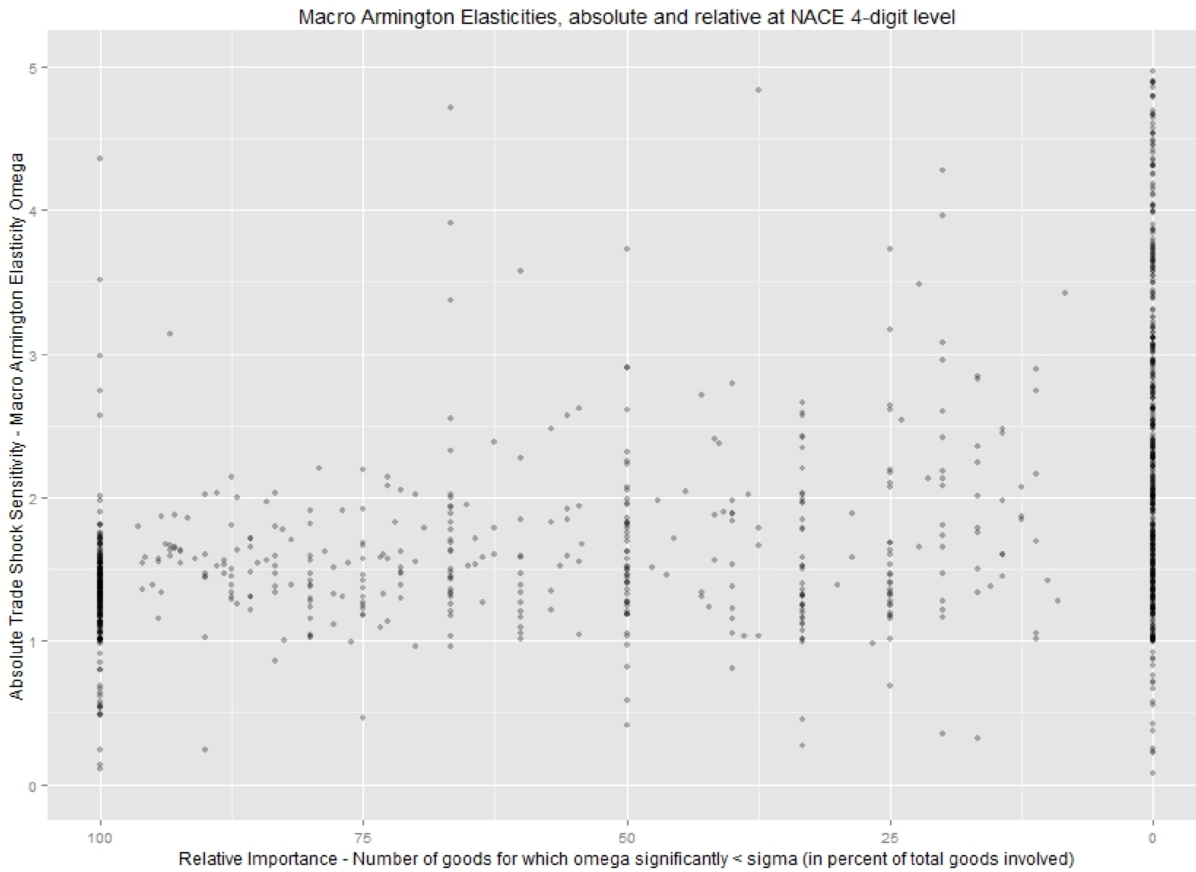
Note: Each row reports the information given in the last line from Tables 31 to 44 in the Appendix B.2. In addition, median estimates and corresponding sectors are displayed.

Table 5: Bootstrap Test Results for NACE 2-digit Sectors (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

	1-step GMM Estimation						2-step GMM Estimation					
Sector	Median ω	Median Country	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Country	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
10	1.615	EL	1611	1466	1319	81.87	1.66	ES	1596	1522	1110	69.55
11	1.459	ES	156	141	89	57.05	1.578	DE	154	145	94	61.04
12	1.344	DE	22	9	6	27.27	1.342	DE	22	9	6	27.27
13	1.322	DE	372	345	289	77.69	1.318	EL	364	355	329	90.38
14	1.482	IT	216	185	145	67.13	1.513	FR	206	176	132	64.08
15	1.457	UK	79	70	42	53.16	1.597	PT	75	61	40	53.33
16	1.011	BLX	222	205	145	65.32	1.341	SE	222	202	133	59.91
17	1.571	FR	304	280	250	82.24	1.437	IT	301	292	266	88.37
20	1.602	DE	992	882	735	74.09	1.534	ES	981	921	751	76.55
22	1.454	FR	503	468	435	86.48	1.63	BLX	500	478	422	84.4
23	1.453	FI	597	527	450	75.38	1.652	DK	591	542	402	68.02
24	1.271	DK	226	200	187	82.74	1.652	PT	223	210	173	77.58
25	1.561	FI	860	807	686	79.77	1.531	EL	845	805	670	79.29
26	1.649	DE	90	67	41	45.56	1.645	ES	88	69	38	43.18
27	1.334	FR	318	297	268	84.28	1.245	ES	306	295	253	82.68
28	1.506	FR	599	558	504	84.14	1.496	DK	586	561	435	74.23
29	1.292	SE	127	114	75	59.06	1.164	SE	125	117	82	65.6
30	1.383	DE	48	38	15	31.25	1.15	UK	47	37	30	63.83
32	1.143	DK	151	144	86	56.95	1.283	DE	148	134	90	60.81

Note: Each row reports the information given in the Tables 31 to 44 in the Appendix B.2, though aggregated across NACE 2-digit sectors. In addition, median estimates and corresponding counries are displayed.

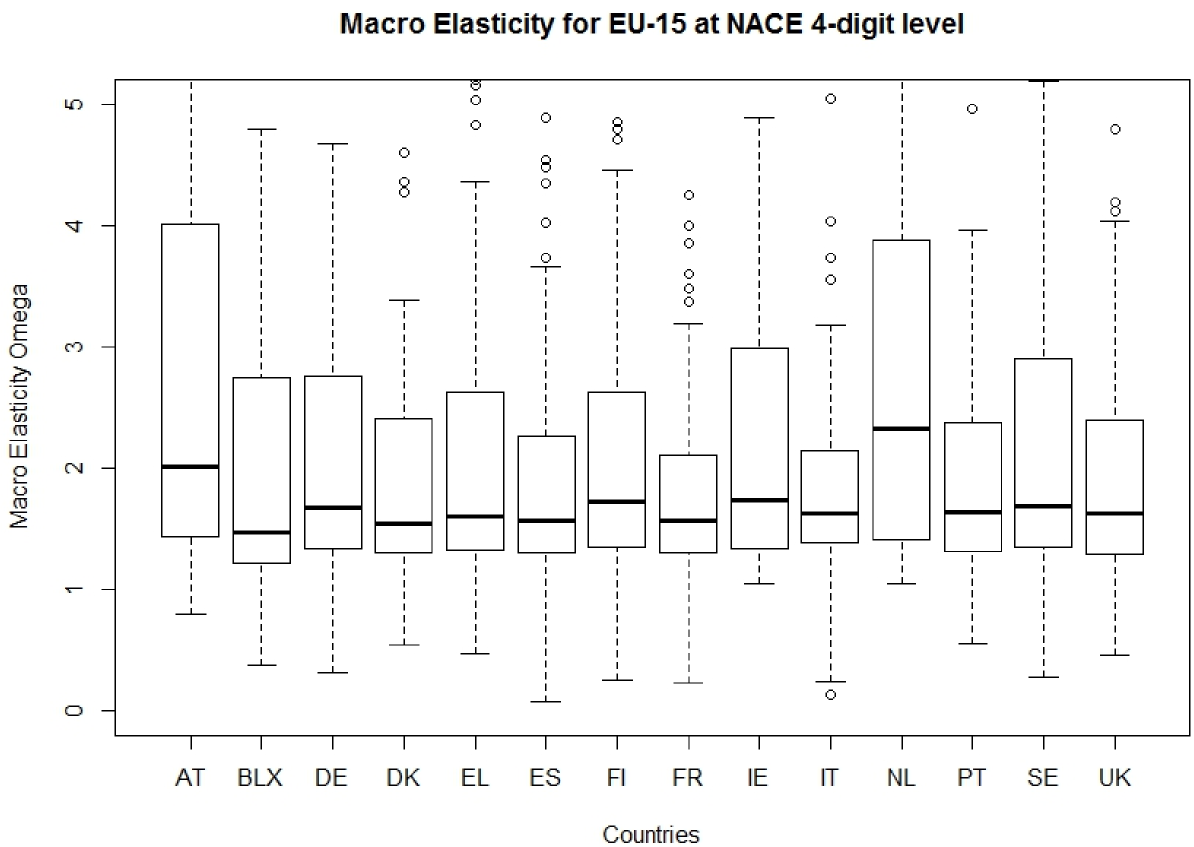
Figure 1: Macro Armington Elasticities, absolute and relative at NACE 4-digit level



5 Discussion

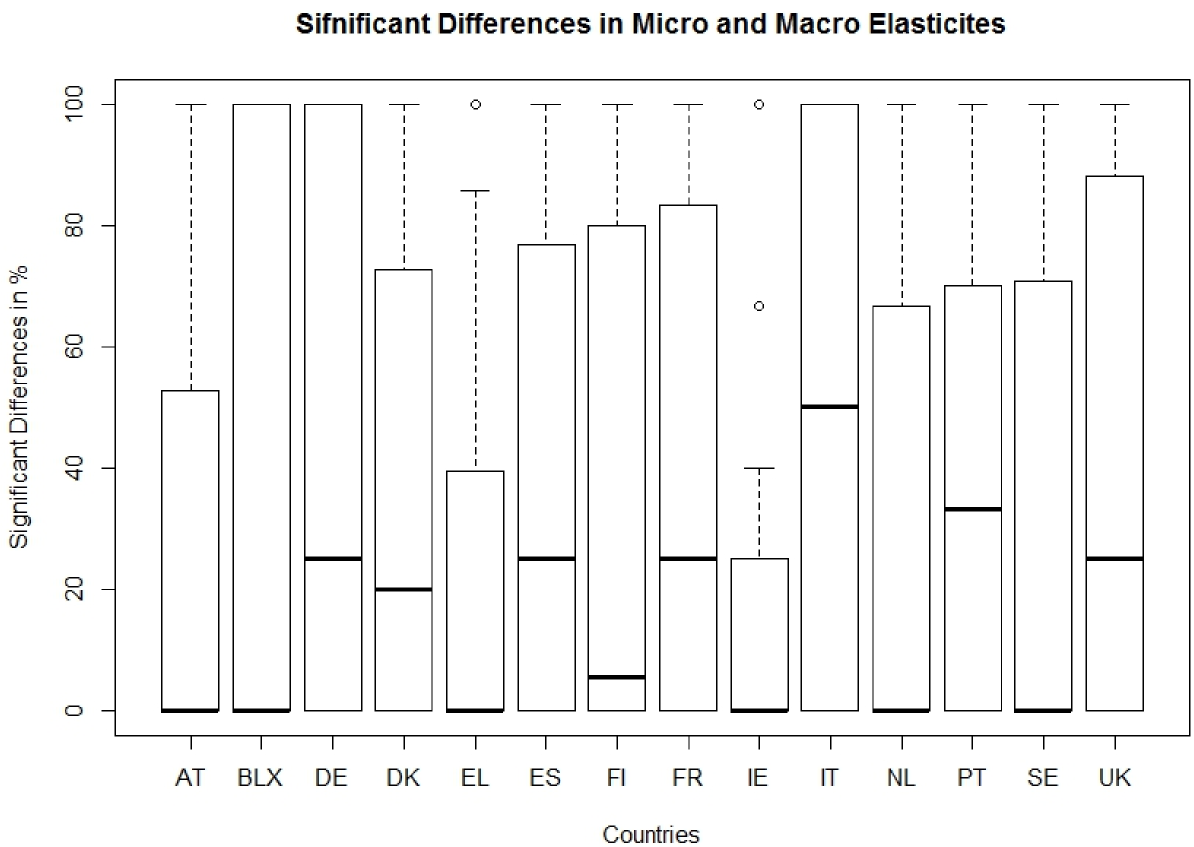
The empirical analysis was performed on a newly constructed panel combining detailed data both on production and bilateral trade for 15 EU Member States over the 1995-2012 period. Our empirical analysis rests upon a standard Melitz-type model with heterogeneous firms and heterogeneous countries separated by asymmetric trade barriers. What distinguishes our theoretical foundations from previous work is the rather general Armington setup as introduced by Feenstra, Luck, Obstfeld, and Russ (2014). In line with the relevant literature this application builds on a multi-country constant elasticity of substitution (CES) demand system, but do not restrict micro and macro Armington elasticities to be the same. Informally speaking, I do not assume that consumers substitute between domestic and, say German machinery as readily as between any other import sources, say Japanese and German machinery. This ultimately, results in a multi-country CES demand system, with three layers of aggregation instead of the usual two. Empirical results indicate a significant difference between micro and macro elasticities on a cross-country industry-level. While median point estimates for the micro elasticity range between 3 and 4 across countries, point

Figure 2: Macro elasticities for EU-15 Countries



estimates for the macro elasticity only range between 1 and 2. For up to one half of the consistent product groups considered, I find by means of a bootstrap test, that macro elasticities are lower than corresponding micro elasticities. These findings are robust to different product pool specifications and not driven by convergence issues in non linear estimation. The empirical analysis indicates significant differences between micro and macro elasticities not only on a cross-sectoral level but especially on a cross-country level. Interestingly, differences in micro and macro elasticities are least significant for those countries struggling lately with their deficit and refinancing such as Greece and Ireland. In contrast, Portugal exhibits about the same differences in micro and macro elasticities as Austria, the Netherlands or Sweden, but lower macro elasticities in absolute size. I conclude that both the absolute and relative size of the macro elasticity are informative with respect to trade shock sensitivity and that any heterogeneous preference pattern may link to current trade imbalances.

Figure 3: Significant Differences in Micro and Macro Elasticities for EU-15 Countries

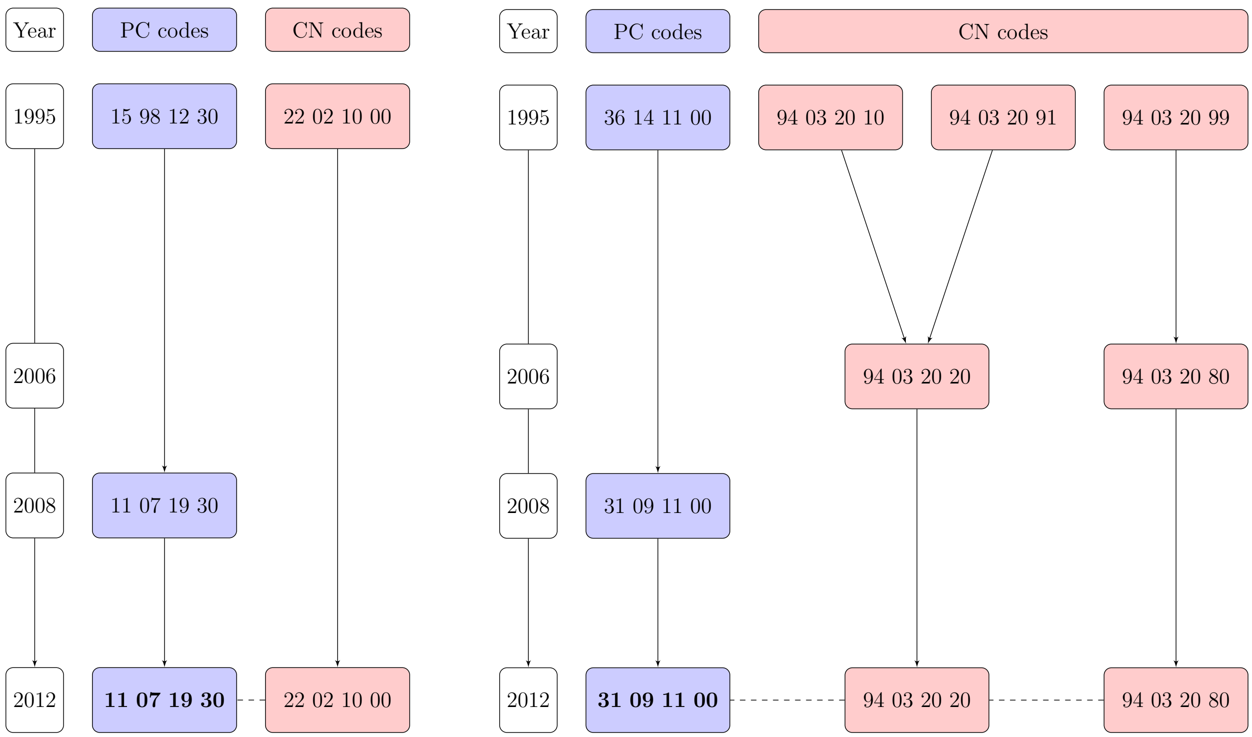


Appendices

A Data

A.1 Consistent Product Groups

Figure 4: Examples of Family Trees of Consistent Product Groups



(a) Consistent product group *11 07 19 30*

(b) Consistent product group *31 09 11 00*

The above figure gives two examples of consistent product groups from Table 2, namely *11 07 19 30* in Panel (a) and *31 09 11 00* in Panel (b). Both panels show the family trees for the consistent product groups (e.g., families) for the period 1995-2012. Each node corresponds to an original 8-digit PC or CN code and represents a 'Family-Tree-Match' (i.e., a family member related with other family members in direct line, collateral line or by 'marriage'). Dashed lines connect 'Between-Matches' (e.g., 'spouses') for the final year of the panel, i.e., the 8-digit PC code *11 07 19 30* in Panel (a) corresponds to the 8-digit CN code *22 02 10 00* and likewise *31 09 11 00* in Panel (b) corresponds to the union of 8-digit CN codes *94 03 20 20* and *94 03 20 80*. Solid lines connect 'Within-Matches' (e.g., relatives in direct or collateral line), i.e., products contained in the 8-digit PC code *11 07 19 30* in Panel (a) have been previously contained in the 8-digit PC code *15 98 12 30* and likewise the 8-digit CN code *94 03 20 20* in Panel (b) has antecedents *94 03 20 10* and *94 03 20 91*. The time line indicates years, in which changes in PC and CN become effective. Note, that 'Between-Matches' could as well have been identified for any year of the panel. For simplicity and stringency, we chose the last year. Consistent product groups are assigned the respective PC 8-digit code in the final year (in bold). Conceptually, a consistent product group could comprise multiple PC codes in the final year, which would require the definition of a new code. For the period considered here (1995-2012), however, this case turns out the be irrelevant.

Table 6: Bootstrap Test Results for EMU-15 (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

	1-step GMM Estimation						2-step GMM Estimation					
Country	Median ω	Median Sector	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Sector	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
AT	1.390	14	242	225	106	43.80	1.303	23	239	232	90	37.66
BLX	1.430	22	182	166	97	53.30	1.503	10	179	164	106	59.22
DE	1.405	17	931	890	599	64.34	1.483	13	918	883	587	63.94
DK	1.143	32	383	339	146	38.12	1.314	17	374	354	151	40.37
EL	1.620	27	324	284	105	32.41	1.739	22	318	295	86	27.04
ES	1.236	17	886	794	373	42.10	1.300	17	867	821	339	39.10
FI	1.586	27	593	522	227	38.28	1.637	11	586	554	218	37.20
FR	1.556	10	701	646	355	50.64	1.381	32	693	663	355	51.23
IE	1.568	23	140	120	38	27.14	1.548	29	139	111	30	21.58
IT	1.506	20	1202	1122	657	54.66	1.217	16	1191	1164	702	58.94
NL	1.641	10	163	143	78	47.85	1.641	10	160	147	83	51.88
PT	1.510	27	679	608	250	36.82	1.597	15	669	579	212	31.69
SE	1.248	11	372	338	143	38.44	1.547	28	364	345	145	39.84
UK	1.483	10	695	625	313	45.04	1.570	17	683	644	268	39.24

Note: Each row reports the information given in the last line from Tables 45 to 58 in the Appendix B.5. However, consistent product groups, for which more than 100 bootstrap samples did not converge, are excluded when calculating the significant share. In addition, median estimates and corresponding sectors are displayed.

A.2 Source Countries and Coverage Shares of Data Set

Table 7: Bootstrap Test Results for NACE 2-digit Sectors (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$, max. 10% convergence issues

	1-step GMM Estimation						2-step GMM Estimation					
Country	Median ω	Median Sector	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Sector	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
10	1.615	EL	1611	1466	820	50.9	1.66	ES	1596	1522	726	45.49
11	1.459	ES	156	141	48	30.77	1.578	DE	154	145	57	37.01
12	1.981	SE	22	12	5	22.73	2.692	FI	22	15	5	22.73
13	1.322	DE	372	345	145	38.98	1.318	EL	364	355	173	47.53
14	1.482	IT	216	185	58	26.85	1.513	FR	206	176	55	26.7
15	1.364	AT	79	72	19	24.05	1.597	PT	75	63	22	29.33
16	1.011	BLX	222	205	83	37.39	1.341	SE	222	202	80	36.04
17	1.571	FR	304	280	173	56.91	1.437	IT	301	292	185	61.46
20	1.602	DE	992	882	444	44.76	1.534	ES	981	921	469	47.81
22	1.454	FR	503	468	305	60.64	1.63	BLX	500	478	310	62
23	1.453	FI	597	527	302	50.59	1.652	DK	591	542	268	45.35
24	1.271	DK	226	200	101	44.69	1.652	PT	223	210	99	44.39
25	1.561	FI	860	807	427	49.65	1.531	EL	845	805	423	50.06
26	1.522	IT	90	69	24	26.67	1.543	PT	88	71	18	20.45
27	1.291	ES	318	299	142	44.65	1.245	ES	306	297	135	44.12
28	1.506	FR	599	558	291	48.58	1.496	DK	586	561	239	40.78
29	1.292	SE	127	118	40	31.5	1.218	NL	125	121	48	38.4
30	1.383	DE	48	42	14	29.17	1.272	DE	47	44	12	25.53
32	1.143	DK	151	146	46	30.46	1.283	DE	148	136	48	32.43

Note: Each row reports the information given in the Tables 45 to 58 in the Appendix B.5, though aggregated across NACE 2-digit sectors. Moreover, consistent product groups, for which more than 100 bootstrap samples did not converge, are excluded when calculating the significant share. In addition, median estimates and corresponding counries are displayed.

Table 8: Bootstrap Test Results for EMU-15 (1995-2012), at NACE 4-digit Level, $\alpha = 5\%$

	1-step GMM Estimation						2-step GMM Estimation					
Country	Median ω	Median Sector	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Sector	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
AT	1.365	2221	244	132	76	31.15	1.551	2221	241	126	77	31.95
BLX	1.505	1082	183	104	86	46.99	1.428	1061	180	112	86	47.78
DE	1.448	1392	934	776	575	61.56	1.520	2849	921	768	575	62.43
DK	1.411	1062	384	245	151	39.32	1.438	1061	375	262	172	45.87
EL	1.339	1062	325	201	109	33.54	1.376	2732	319	206	104	32.60
ES	1.386	2829	887	706	465	52.42	1.497	1621	868	717	470	54.15
FI	1.512	2312	593	405	237	39.97	1.585	1729	586	436	271	46.25
FR	1.312	1610	702	564	376	53.56	1.474	1729	694	565	397	57.20
IE	1.568	2041	141	67	29	20.57	1.602	1013	140	71	30	21.43
IT	1.516	2814	1203	1011	720	59.85	1.545	1039	1192	1056	747	62.67
NL	1.557	2014	163	97	73	44.79	1.587	1031	160	90	69	43.12
PT	1.526	1013	680	490	271	39.85	1.508	2015	670	508	290	43.28
SE	1.348	2593	372	250	162	43.55	1.497	1081	364	238	163	44.78
UK	1.299	2592	695	518	348	50.07	1.468	2016	683	531	368	53.88

Note: Each row reports median macro elasticities ω, which are identified at a NACE 4-digit level, though aggregated for each country. In addition, median estimates and corresponding sectors are displayed.

Table 9: Bootstrap Test Results for EMU-15 (1995-2012), at NACE 4-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

	1-step GMM Estimation						2-step GMM Estimation					
Country	Median ω	Median Sector	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Sector	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
AT	1.365	2221	244	132	49	20.08	1.551	2221	241	126	51	21.16
BLX	1.505	1082	183	104	52	28.42	1.428	1061	180	112	51	28.33
DE	1.448	1392	934	776	424	45.40	1.520	2849	921	768	425	46.15
DK	1.411	1062	384	245	70	18.23	1.438	1061	375	262	73	19.47
EL	1.339	1062	325	201	51	15.69	1.376	2732	319	206	52	16.30
ES	1.386	2829	887	706	234	26.38	1.497	1621	868	717	247	28.46
FI	1.512	2312	593	405	120	20.24	1.585	1729	586	436	147	25.09
FR	1.312	1610	702	564	225	32.05	1.474	1729	694	565	246	35.45
IE	1.568	2041	141	67	16	11.35	1.602	1013	140	71	11	7.86
IT	1.516	2814	1203	1011	470	39.07	1.545	1039	1192	1056	499	41.86
NL	1.557	2014	163	97	51	31.29	1.587	1031	160	90	47	29.38
PT	1.526	1013	680	490	152	22.35	1.508	2015	670	508	166	24.78
SE	1.348	2593	372	250	88	23.66	1.497	1081	364	238	90	24.73
UK	1.299	2592	695	518	184	26.47	1.468	2016	683	531	210	30.75

Note: Each row reports median macro elasticities ω, which are identified at a NACE 4-digit level, though aggregated for each country. However, consistent product groups, for which more than 100 bootstrap samples did not converge, are excluded when calculating the significant share. In addition, median estimates and corresponding sectors are displayed.

Table 10: Consistent Product Groups by Number of 8-digit CN and PC Codes (1995-2012)

Number of 8-digit PC and CN codes per consistent product group	Frequency	Percentage (%)	Cumulative Percentage (%)
3	1091	40.97	40.97
4	312	11.72	52.68
5	345	12.96	65.64
6	172	6.46	72.10
7	151	5.67	77.77
8	134	5.03	82.80
9	87	3.27	86.07
10	64	2.40	88.47
11	49	1.84	90.31
12	50	1.88	92.19
13	23	0.86	93.05
14	31	1.16	94.22
≥ 15	15	5.78	100.00
Total	2662	100.00	

Note: The first column gives the overall number of original 8-digit PC *and* CN codes per consistent product group (i.e., median family size). The second column reports the frequency of consistent product groups by numbers of original 8-digit codes (i.e, the frequency of families by different family size). The corresponding percentages and cumulative percentages are in the third and fourth column respectively.

Table 11: Consistent Product Groups by Number of of 8-digit CN Codes (1995-2012)

Number of 8-digit CN codes per consistent product group	Frequency	Percentage (%)	Cumulative Percentage (%)
1	1155	43.37	43.37
2	353	13.26	56.63
3	400	15.02	71.65
4	175	6.57	78.22
5	132	4.96	83.18
6	108	4.06	87.23
7	71	2.67	89.90
8	52	1.95	91.85
9	44	1.65	93.50
10	33	1.24	94.74
11	15	0.56	95.31
12	20	0.75	96.06
13	19	0.71	96.77
14	10	0.38	97.15
≥ 15	75	2.85	100.00
Total	2662	100.00	

Note: The first column gives the number of original 8-digit CN codes per consistent product group (i.e., the number of CN family members per family). The second column reports the frequency of consistent product groups by numbers of original 8-digit CN codes (i.e, the frequency of families by different family size). The corresponding percentages and cumulative percentages are in the third and fourth column respectively.

Table 12: Consistent Product Groups by Number of 8-digit PC Codes (1995-2012)

Number of 8-digit PC codes per consistent product group	Frequency	Percentage (%)	Cumulative Percentage (%)
2	2057	77.24	77.24
3	238	8.94	86.18
4	134	5.03	91.21
5	111	4.17	95.38
6	40	1.50	96.88
7	36	1.35	98.24
8	12	0.45	98.69
9	12	0.45	99.14
≥ 10	23	0.86	100.00
Total	2662	100.00	

Note: The first column gives the number of original 8-digit PC codes per consistent product group (i.e., the number of PC family members per family). The second column reports the frequency of consistent product groups by numbers of original 8-digit PC codes (i.e, the frequency of families by different family size). The corresponding percentages and cumulative percentages are in the third and fourth column respectively.

B Detailed Results

B.1 Macro Armington Elasticities - Using Moment Conditions

Table 13: Source Countries

Country	Iso Code	EU-27 Member State	EU-15 Member State
Germany	DE	yes	yes
France	FR	yes	yes
Netherlands	NL	yes	yes
United Kingdom	UK	yes	yes
Italy	IT	yes	yes
Belgium-Luxembourg [b]	BLX	yes	yes
Spain	ES	yes	yes
Austria	AT	yes	yes
Sweden	SE	yes	yes
Poland	PL	yes	no
Czech Republic	CZ	yes	no
Ireland	IE	yes	yes
Denmark	DK	yes	yes
Hungary	HU	yes	no
Portugal	PT	yes	yes
Finland	FI	yes	yes
Slovakia	SK	yes	no
Romania	RO	yes	no
Greece	EL	yes	yes
Slovenia	SI	yes	no
Bulgaria	BG	yes	no
Lithuania	LT	yes	no
Estonia	EE	yes	no
Latvia	LV	yes	no
Cyprus	CY	yes	no
Malta	MT	yes	no
United States	US	no	no
China	CN	no	no
Switzerland	CH	no	no
Russian Federation	RU	no	no
Japan	JP	no	no
Norway	NO	no	no
Turkey	TR	no	no
Korea, Republic of	KR	no	no
Brazil	BR	no	no
Canada	CA	no	no
India	IN	no	no
Taiwan	TW	no	no
Singapore	SG	no	no
Saudi Arabia	SA	no	no
Hong Kong	HK	no	no
South Africa	ZA	no	no
Australia	AU	no	no
Algeria	DZ	no	no
Malaysia	MY	no	no
Mexico	MX	no	no
United Arab Emirates	AE	no	no
Israel	IL	no	no
Thailand	TH	no	no

Note: Source countries are ranked according to their EU-27 membership status and according to their trade intensity with EU-27 Member States proxied by total traded value with EU-27 Member States (i.e., the value imported from plus the value exported to EU-27 Member States).

Table 14: Coverage Shares for Trade and Production Data for EMU-15 (1995-2012)

Country	(1) Production Matched (in % of Total Production) [a]	(2) Trade Matched (in % of Trade with Source Countries)[b]
AT	64.60	62.79
BLX	72.53	57.76
DE	72.76	65.52
DK	73.36	60.90
EL	70.27	58.68
ES	72.41	68.52
FI	58.15	50.19
FR	69.57	66.69
IE	44.65	34.48
IT	68.91	69.43
NL	68.58	48.59
PT	70.52	67.67
SE	69.83	58.28
UK	72.12	55.53

Note: Column (1) reports the production value sold, which could be matched with trade data, as a share of total production value sold. Column (2) reports the trade value (imports plus exports) with 50 source countries (as listed in Table (13)), which could be matched with production data, as a share of total value traded (imports plus exports) with the 50 source countries (i.e., conditional coverage of trade data).

ALTERNATIVELY: Note: Column (1) reports the matched production value sold as a share of total production value sold. Column (2) reports the matched trade value (imports plus exports) with 50 source countries (as listed in Table (13)) as a share of total value traded (imports plus exports) with the 50 source countries (i.e., conditional coverage of trade data).

Table 15: Conditional and Unconditional Coverage Shares for Trade Data for EMU-15 (1995-2012)

Country	(1) Matched Trade Value with Source Countries (in % of Total Trade)	(2) Trade Value with Source Countries (in % of Total Trade)	(3) Matched Trade Value with Source Countries (in % of Trade Value with Source Countries)
AT	61.15	97.41	62.79
BLX	57.15	98.94	57.76
DE	64.22	98.02	65.52
DK	60.12	98.72	60.90
EL	56.75	96.70	58.68
ES	66.33	96.79	68.52
FI	49.66	98.95	50.19
FR	64.23	96.31	66.69
IE	34.05	98.76	34.48
IT	67.02	96.53	69.43
NL	47.07	96.87	48.59
PT	66.73	98.62	67.67
SE	57.49	98.65	58.28
UK	53.05	95.54	55.53

Note: Column (1) reports the trade value (imports plus exports) with with 50 source countries (as listed in Table 13), which could be matched with production data, as a share of total trade value (imports plus exports) (i.e., unconditional coverage of trade data). Column (2) reports the trade value with the 50 source countries as a share of total trade value (imports plus exports). Column (3) reports the trade value with the 50 source countries, which could be matched with production data, as a share of the value traded with the 50 source countries (i.e., conditional coverage of trade data which results from dividing column (1) by column (2)).

Note: ALTERNATIVELY: Column (1) reports the matched trade value (imports plus exports) with 50 source countries (as listed in Table 13) as a share of total trade value (imports plus exports) (i.e., unconditional coverage of trade data). Column (2) reports the trade value with the 50 source countries as a share of total value traded. Column (3) reports the matched trade value with the 50 source countries as a share of the value traded with the 50 source countries (i.e., conditional coverage of trade data which results from dividing column (1) by column (2)).

Table 16: Country Ranking for Macro Elasticities (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

NACE	Macro Elasticity (ω) using MC2 & MC3, 1-step GMM Estimation				Macro Elasticity (ω) using MC2 & MC3, 2-step GMM Estimation			
	Median ω	Min (1)	Med (2)	Max (3)	Median ω	Min (1)	Med (2)	Max (3)
10	1.615	UK	EL	DE	1.66	EL	ES	PT
11	1.459	IE	ES	FR	1.578	DK	DE	IT
12	1.344	PT	DE	DK	1.342	PT	DE	SE
13	1.322	FR	DE	BLX	1.318	DK	EL	UK
14	1.482	ES	IT	IE	1.513	ES	FR	PT
15	1.457	DK	UK	PT	1.597	ES	PT	EL
16	1.011	SE	BLX	DE	1.341	PT	SE	FI
17	1.571	AT	FR	NL	1.437	DE	IT	NL
20	1.602	DK	DE	AT	1.534	FI	ES	FR
22	1.454	DK	FR	IE	1.63	DK	BLX	IE
23	1.453	AT	FI	NL	1.652	FR	DK	PT
24	1.271	EL	DK	NL	1.652	AT	PT	NL
25	1.561	DK	FI	IT	1.531	DK	EL	IE
26	1.649	FR	DE	UK	1.645	FR	ES	DE
27	1.334	SE	FR	EL	1.245	DE	ES	PT
28	1.506	SE	FR	EL	1.496	IT	DK	EL
29	1.292	IT	SE	FR	1.164	EL	SE	FR
30	1.383	SE	DE	DK	1.15	SE	UK	PT
32	1.143	IT	DK	UK	1.283	IT	DE	UK

Note: The second and sixth column report median ω estimates for each NACE 2-digit sector across EU-15 Member States (see columns (2b) and (2c) of Tables 17-30 for details).

B.2 Bootstrap Test Results at NACE 2-digit level

Table 17: Detailed GMM Estimates of the Macro Elasticity for Austria (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
					1-step GMM	2-step GMM	1-step GMM	2-step GMM
		(a)	(b)	(c)	(1b)	(1c)	(2b)	(2c)
Food	10	245	76	75	0.833	0.759	1.563	1.493
Products					[-0.187,1.681]	[-0.362,2.15]	[0.979,1.784]	[1.068,3.173]
Alcohol &	11	26	13	13	-0.184	0.255	1.335	1.205
Soft Drinks					[-0.408,3.983]	[-0.549,3.837]	[1.018,3.015]	[0.994,2.519]
Tobacco	12	5	0	0				
Textiles	13	139	6	5		-0.065	1.535	-0.102
Manufacturing						[-1.88,2.869]	[0.374,3.369]	[0.75,3.267]
Apparel	14	118	11	11	0.514	0.404	1.39	1.553
Manufacturing					[-0.941,4.304]	[-1.267,4.14]	[-0.043,6.913]	[1.263,4.615]
Leather & Footwear	15	38	2	2	1.844	2.15	1.364	1.387
Manufacturing					[1.434,5.332]	[1.354,4.646]	[1.197,2.497]	[1.01,3.213]
Wood	16	39	15	15	0.77	1.422	0.644	1.028
					[-0.378,1.76]	[-0.291,2.065]	[-0.507,1.86]	[-0.381,2.22]
Paper	17	51	10	10	-0.795	0.351	0.482	1.392
					[-1.35,2.845]	[-0.971,2.692]	[0.424,1.476]	[0.501,1.563]
Chemical	20	452	17	17	-1.451		2.082	1.635
Manufacturing					[-3.187,1.777]		[-2.069,2.58]	[0.98,2.17]
Rubber &	22	97	16	16	0.293	1.254	1.393	1.66
Plastic					[-0.896,2.44]	[-0.538,2.848]	[0.659,1.501]	[0.683,1.991]
Glas, Stone &	23	130	24	24	0.859	0.069	1.016	1.303
Misc Material					[-0.295,1.937]	[-0.895,1.809]	[0.583,1.468]	[0.453,1.914]
Primary	24	86	4	4	4.581	1.562	1.146	1.241
Metals					[-4.771,6.37]	[-3.755,6.341]	[1.012,1.797]	[1.082,1.799]
Metal	25	240	24	24	0.225	0.522	1.659	1.025
Products					[-0.943,1.849]	[-1.072,2.249]	[1.348,1.727]	[1.01,2.068]
Electronic	26	145	0	0				
Components								
Electronic	27	171	8	8	1.057	0.513	1.176	1.125
Motors					[-1.534,6.82]	[-2.118,4.62]	[1.11,14.898]	[1.014,7.224]
Machinery	28	415	8	7	-1.379		1.56	1.273
Manufacturing					[-3.06,1.36]		[1.013,2.921]	[0.152,2.586]
Motor Vehicle	29	51	5	5	1.639		2.345	1.524
Components					[-5.253,4.537]		[1.448,3.871]	[-0.908,4.303]
Transportation	30	40	0	0				
Systems								
Toys, Sports &	32	131	3	3	-0.03	-0.223	1.545	1.566
Leisure Tools					[-9.449,26.625]	[-4.831,16.037]	[1.137,26.604]	[1.015,7.039]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 18: Detailed GMM Estimates of the Macro Elasticity for Belgium-Luxembourg (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups (a)	(b)	(c)	MC2 1-step GMM (1b)	MC2 2-step GMM (1c)	MC2 & MC3 1-step GMM (2b)	MC2 & MC3 2-step GMM (2c)
Food Products	10	245	64	63	0.855 [-0.563,1.33]	0.896 [-0.326,1.476]	1.537 [1.166,1.681]	1.503 [1.019,2.004]
Alcohol & Soft Drinks	11	26	5	5			1.21 [1.013,3.825]	1.12 [1.102,2.25]
Tobacco	12	5	1	1				
Textiles Manufacturing	13	139	7	7		0.205 [-0.693,1.622]	2.246 [-0.4,2.449]	1.233 [0.439,2.09]
Apparel Manufacturing	14	118	0	0				
Leather & Footwear Manufacturing	15	38	0	0				
Wood	16	39	9	9	-2.035 [-4.242,2]		1.011 [-2.918,1.519]	1.183 [0.795,1.783]
Paper	17	51	15	14	-0.472 [-1.913,2.221]	-0.787 [-1.98,1.722]	1.707 [1.014,1.78]	1.512 [0.984,1.793]
Chemical Manufacturing	20	452	25	24	0.029 [-1.517,2.09]	0.005 [-1.494,2.076]	1.656 [1.017,1.96]	1.726 [1.259,2.077]
Rubber & Plastic	22	97	11	11	1.188 [-1.446,1.55]	1.044 [-1.18,2.639]	1.43 [0.4,2.883]	1.63 [1.177,2.203]
Glas, Stone & Misc Material	23	130	18	18	-0.153 [-2.099,2.53]		1.441 [-0.009,1.763]	1.167 [1.021,1.95]
Primary Metals	24	86	5	5	8.207 [-7.308,7.274]	1.824 [-6.437,8.64]	1.059 [-4.059,7.246]	3.498 [-4.758,4.436]
Metal Products	25	241	19	19	0.299 [-0.521,1.707]		1.212 [1.127,1.353]	1.007 [0.113,1.723]
Electronic Components	26	145	0	0				
Electronic Motors	27	171	1	1				
Machinery Manufacturing	28	415	0	0				
Motor Vehicle Components	29	51	1	1				
Transportation Systems	30	40	0	0				
Toys, Sports & Leisure Tools	32	131	1	1				

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 19: Detailed GMM Estimates of the Macro Elasticity for Germany (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups (a)	(b)	(c)	MC2 1-step GMM (1b)	MC2 2-step GMM (1c)	MC2 & MC3 1-step GMM (2b)	MC2 & MC3 2-step GMM (2c)
Food Products	10	245	161	161	0.6 [-0.639,1.46]	0.37 [-0.727,1.86]	2.017 [1.02,2.219]	2.321 [1.088,2.63]
Alcohol & Soft Drinks	11	26	11	11	11.321 [-1.628,6.236]	1.473 [-2.12,5.71]	1.657 [1.013,3.26]	1.578 [1.014,2.286]
Tobacco	12	5	3	3		-2.479 [-10.77,11.83]	1.344 [0.812,2.798]	1.342 [0.733,2.507]
Textiles Manufacturing	13	139	28	27	0.421 [-0.543,1.454]	1.529 [-0.504,1.828]	1.322 [1.012,1.633]	1.483 [0.991,1.728]
Apparel Manufacturing	14	118	11	11	0.406 [-0.433,2.253]	-0.165 [-0.537,2.145]	1.499 [0.429,2.834]	1.473 [-0.291,3.509]
Leather & Footwear Manufacturing	15	38	3	2	36.241 [-5.494,7.047]	11.746 [-4.128,6.6]	1.015 [1.064,1.578]	24.338 [1.003,1.626]
Wood	16	39	19	19	2.826 [-0.224,4.5]	4.117 [1.056,5.042]	2.033 [1.296,3.894]	2.086 [1.301,2.909]
Paper	17	51	32	32	-0.256 [-1.222,2.648]	-0.352 [-1.469,2.66]	1.405 [1.009,1.437]	0.657 [0.566,1.532]
Chemical Manufacturing	20	452	106	106	0.238 [-0.566,0.669]	0.162 [-0.849,1.127]	1.602 [1.452,1.616]	1.479 [0.52,2.007]
Rubber & Plastic	22	97	59	59	0.729 [-0.656,1.778]	-0.06 [-0.627,2.084]	1.62 [1.498,1.647]	1.55 [1.024,2.074]
Glas, Stone & Misc Material	23	130	78	78	0.04 [-0.62,0.649]	0.398 [-0.751,0.951]	1.612 [1.147,1.617]	1.66 [1.017,1.949]
Primary Metals	24	86	34	32	-0.003 [-1.427,1.885]	0.788 [-1.775,2.13]	1.012 [0.338,1.737]	1.288 [1.039,2.568]
Metal Products	25	241	137	135		-0.057 [-0.376,1.281]	1.719 [1.113,1.78]	1.83 [1.153,2.108]
Electronic Components	26	145	20	19	0.291 [-0.599,1.58]		1.649 [0.164,2.679]	2.892 [1.026,2.792]
Electronic Motors	27	171	59	55	-0.122 [-1.125,1.125]	0.368 [-1.181,1.566]	1.271 [0.388,2.486]	0.988 [0.698,2.072]
Machinery Manufacturing	28	415	123	121	0.046 [-0.376,1.085]		1.358 [1.227,1.489]	1.811 [0.531,2.626]
Motor Vehicle Components	29	51	22	22	0.119 [-3.68,1.785]	-1.187 [-3.073,2.255]	0.442 [0.381,1.568]	1.452 [0.98,1.538]
Transportation Systems	30	40	6	6	2.167 [-2.744,2.309]	2.071 [-1.92,2.135]	1.383 [1.014,3.212]	1.272 [1.016,1.641]
Toys, Sports & Leisure Tools	32	131	19	19	2.003 [0.747,1.831]	1.449 [0.511,1.767]	0.867 [0.767,1.507]	1.283 [1.017,1.562]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 20: Detailed GMM Estimates of the Macro Elasticity for Denmark (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups (a)	(b)	(c)	MC2 1-step GMM (1b)	MC2 2-step GMM (1c)	MC2 & MC3 1-step GMM (2b)	MC2 & MC3 2-step GMM (2c)
Food Products	10	245	118	116	1.165 [-0.461,1.482]	0.614 [-0.464,1.56]	1.715 [1.463,2.389]	1.525 [1.358,1.925]
Alcohol & Soft Drinks	11	26	9	8	1.158 [-4.477,7.59]		-2.788 [-12.313,9.24]	-3.466 [-7.798,4.819]
Tobacco	12	5	3	3		1.427 [-0.899,5.896]	8.505 [-0.181,8.288]	3.152 [0.788,6.335]
Textiles Manufacturing	13	139	10	10	-0.774 [-2.007,4.626]	-2.984 [-1.708,3.947]	1.02 [-3.787,2.554]	-7.24 [-2.82,2.817]
Apparel Manufacturing	14	118	1	1				
Leather & Footwear Manufacturing	15	38	3	2	-0.354 [-1.382,1.878]	-0.739 [-1.015,2.532]	0.049 [-0.538,1.567]	
Wood	16	39	7	7			0.451 [-0.173,2.447]	1.332 [-0.132,2.303]
Paper	17	51	10	10	0.843 [-1.929,2.425]	1.329 [-1.826,3.101]	1.322 [0.651,1.421]	1.314 [0.766,1.41]
Chemical Manufacturing	20	452	55	54	0.256 [-0.2,1.821]	0.462 [-0.227,1.843]	1.024 [0.973,2.55]	1.029 [0.581,2.184]
Rubber & Plastic	22	97	29	29	-0.377 [-0.617,1.567]	-0.239 [-0.545,1.792]	0.004 [-0.491,1.701]	-0.682 [-0.751,1.877]
Glas, Stone & Misc Material	23	130	28	28	-0.601 [-0.688,1.624]	-0.333 [-0.82,1.888]	1.804 [0.513,1.919]	1.652 [1.01,2.357]
Primary Metals	24	86	11	11	-0.424 [-2.175,2.216]	0.77 [-1.077,2.474]	1.271 [0.273,1.608]	1.46 [0.985,1.736]
Metal Products	25	241	37	35	1.154 [0.158,1.899]	1.196 [0.133,1.96]	0.468 [-0.303,2.794]	-0.143 [-0.169,2.039]
Electronic Components	26	145	8	7	-0.015 [-1.305,1.326]	-0.259 [-1.449,1.566]	1.007 [-0.176,1.397]	1.311 [-0.559,1.434]
Electronic Motors	27	171	14	13	0.274 [-0.793,2.419]	1.395 [0.02,1.978]	1.345 [0.333,2.265]	1.638 [0.934,2.576]
Machinery Manufacturing	28	415	29	29	0.074 [-0.352,1.63]	1.339 [-0.182,1.773]	2.024 [0.163,1.887]	1.496 [0.078,2.356]
Motor Vehicle Components	29	51	3	3			1.133 [1.068,4.083]	1.134 [1.047,2.724]
Transportation Systems	30	40	3	3			1.521 [-6.827,5.116]	1.339 [-0.577,4.725]
Toys, Sports & Leisure Tools	32	131	5	5	1.197 [-1.77,5.135]	1.152 [-0.517,4.252]	1.143 [-1.269,4.481]	1.25 [0.731,3.679]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 21: Detailed GMM Estimates of the Macro Elasticity for Greece (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
					1-step GMM	2-step GMM	1-step GMM	2-step GMM
		(a)	(b)	(c)	(1b)	(1c)	(2b)	(2c)
Food Products	10	245	89	88	1.811	0.234	1.615	0.929
					[-0.302,1.716]	[-0.482,1.78]	[0.456,1.705]	[-1.728,2.951]
Alcohol & Soft Drinks	11	26	11	11	1.576	1.041	1.824	1.883
					[-0.764,2.042]	[-0.651,3.073]	[1.012,2.38]	[1.038,3.209]
Tobacco	12	5	2	2	14.288	-19.903	8.284	7.038
					[-28.539,24.689]	[-26.786,24.572]	[-38.224,37.724]	[-15.994,33.238]
Textiles Manufacturing	13	139	13	13	0.683	1.64	1.283	1.318
					[-1.046,1.91]	[-1.05,2.393]	[1.254,1.708]	[1.027,2.326]
Apparel Manufacturing	14	118	15	14	-1.596	0.229	2.165	1.742
					[-0.165,2.861]	[-0.642,2.575]	[0.31,4.472]	[0.986,1.954]
Leather & Footwear Manufacturing	15	38	8	8	-1.242	2.098	1.83	4.835
					[-3.066,5.107]	[-1.375,5.971]	[1.287,3.911]	[1.498,4.007]
Wood	16	39	13	13	1.478		1.362	1.534
					[-0.754,2.105]		[1.222,1.504]	[1.221,1.905]
Paper	17	51	19	19	1.238	0.467	1.687	1.7
					[0.257,3.663]	[-0.325,2.774]	[1.315,3.658]	[1.234,2.731]
Chemical Manufacturing	20	452	30	29	1.251	0.104	1.591	1.752
					[-0.262,2.636]	[-0.645,2.537]	[0.468,2.885]	[1.026,2.452]
Rubber & Plastic	22	97	26	26		0.5	1.676	1.739
						[-1.092,3.081]	[0.609,3.005]	[0.99,3.433]
Glas, Stone & Misc Material	23	130	19	17		-1.195	1.357	1.814
						[-1.359,3.193]	[1.015,3.196]	[1.249,3.725]
Primary Metals	24	86	7	7	-0.157	0.008	0.466	1.444
					[-1.16,2.022]	[-1.016,2.423]	[0.344,1.592]	[0.445,1.625]
Metal Products	25	239	27	27		0.009	1.592	1.531
						[-1.182,1.746]	[0.407,1.781]	[0.747,2.425]
Electronic Components	26	145	0	0				
Electronic Motors	27	171	18	18		-0.252	1.62	1.382
						[-1.516,2.051]	[0.444,1.772]	[0.968,1.765]
Machinery Manufacturing	28	415	19	19	0.32	1.543	2.102	2.368
					[-0.93,2.323]	[-1.001,2.679]	[-0.642,2.367]	[-0.656,3.311]
Motor Vehicle Components	29	51	4	4	1.613	0.219	1.73	0.719
					[-0.711,6.405]	[-1.288,6.144]	[0.716,8.2]	[0.706,9.331]
Transportation Systems	30	40	1	1				
Toys, Sports & Leisure Tools	32	131	3	2	1.029	19.252	1.045	
					[-3.273,5.86]	[-2.708,7.274]	[-5.076,3.265]	

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 22: Detailed GMM Estimates of the Macro Elasticity for Spain (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
		(a)	(b)	(c)	1-step GMM (1b)	2-step GMM (1c)	1-step GMM (2b)	2-step GMM (2c)
Food Products	10	245	149	148		0.923 [0.377,2.659]	1.629 [0.425,1.871]	1.66 [0.984,3.37]
Alcohol & Soft Drinks	11	26	18	17		1.179 [0.243,2.114]	1.459 [0.912,2.227]	1.725 [1.247,2.776]
Tobacco	12	5	2	2	2.163 [0.393,11.889]		1.043 [-1.828,4.642]	1.193 [-2.271,6.861]
Textiles Manufacturing	13	139	57	55	0.242 [-0.662,3.262]	0.139 [-0.902,3.084]	1.146 [0.636,2.99]	1.432 [0.537,1.608]
Apparel Manufacturing	14	118	34	30	2.348 [-0.556,2.665]	1.821 [-0.601,2.98]	0.056 [-0.247,1.431]	0.626 [0.036,1.855]
Leather & Footwear Manufacturing	15	38	9	9	1.371 [-2.789,5.333]	1.626 [-0.837,3.999]	1.01 [-2.034,3.828]	0.844 [-0.117,3.11]
Wood	16	39	29	29	1.198 [-0.678,2.63]	1.701 [-0.881,2.753]	0.634 [0.042,1.909]	2.021 [0.222,2.451]
Paper	17	51	28	28	1.682 [-1.066,2.74]	1.078 [-1.152,2.805]	1.236 [0.713,1.604]	1.3 [1.015,2.212]
Chemical Manufacturing	20	452	131	130	-0.653 [-0.529,1.427]	0.052 [-0.529,1.742]	1.573 [1.013,1.977]	1.534 [1.008,1.794]
Rubber & Plastic	22	97	63	63		1.486 [-0.524,2.256]	1.568 [0.43,1.575]	1.527 [1.006,1.615]
Glas, Stone & Misc Material	23	130	63	62	-0.409 [-0.826,2.935]	2.278 [0.563,3.25]	1.45 [0.539,2.036]	2.08 [1.374,3.004]
Primary Metals	24	86	23	23		-0.09 [-2.037,2.38]	1.034 [1.012,1.793]	1.541 [1.067,2.018]
Metal Products	25	241	114	111			1.256 [0.368,1.615]	0.988 [0.969,1.782]
Electronic Components	26	145	11	11	2.594 [-0.987,3.931]	2.57 [-0.578,3.965]	1.68 [0.306,2.388]	1.645 [-0.405,3.109]
Electronic Motors	27	171	37	35	1.001 [-0.503,2.012]		1.291 [1.197,1.615]	1.245 [0.987,1.716]
Machinery Manufacturing	28	415	83	79	0.496 [-0.347,1.437]		1.726 [1.226,1.968]	1.015 [1.013,2.045]
Motor Vehicle Components	29	51	12	12	-0.055 [-1.973,1.804]	1.421 [-1.392,2.479]	1.014 [-0.302,1.913]	0.986 [0.753,2.43]
Transportation Systems	30	40	2	2	1.722 [-7.328,14.163]	2.237 [-5.127,10.953]	1.099 [-0.902,7.314]	1.099 [1.026,4.676]
Toys, Sports & Leisure Tools	32	131	21	21	2.762 [-0.922,3.444]	1.005 [-0.257,2.571]	0.133 [0.287,2.433]	1.267 [0.683,2.335]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 23: Detailed GMM Estimates of the Macro Elasticity for Finland (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
		(a)	(b)	(c)	1-step GMM (1b)	2-step GMM (1c)	1-step GMM (2b)	2-step GMM (2c)
Food Products	10	244	133	131	0.58 [-0.019,1.633]	0.648 [-0.041,1.737]	1.663 [0.967,2.144]	2.13 [-0.576,3.075]
Alcohol & Soft Drinks	11	26	13	14	0.502 [-3.84,3.996]	0.44 [-3.582,2.858]	1.644 [0.6,4.236]	1.637 [0.597,3.301]
Tobacco	12	5	2	2	6.657 [1.552,17.321]	3.657 [-0.304,11.369]	6.752 [1.713,18.739]	2.692 [1.181,10.884]
Textiles Manufacturing	13	139	34	34	1.317 [-0.367,1.309]	0.388 [-0.556,1.786]	1.611 [1.015,1.745]	1.38 [1.301,1.733]
Apparel Manufacturing	14	118	20	19	0.599 [-0.209,2.352]		2.08 [1.503,2.249]	1.59 [1.299,2.233]
Leather & Footwear Manufacturing	15	38	9	9		-0.625 [-4.024,3.766]	0.969 [0.964,5.918]	1.822 [-1.034,4.12]
Wood	16	39	16	16	0.491 [-0.762,6.465]	0.331 [-1.363,5.16]	-0.36 [-0.635,26.827]	3.063 [1.014,6.392]
Paper	17	51	27	26	1.024 [-0.068,2.008]	1.286 [0.057,2.106]	2.089 [0.674,2.201]	2.194 [1.025,2.885]
Chemical Manufacturing	20	452	69	68	1.047 [0.366,1.641]	0.811 [0.489,1.775]	1.796 [0.977,2.064]	0.943 [0.964,2.56]
Rubber & Plastic	22	97	46	45		-0.119 [-0.362,2.446]	1.154 [1.017,1.866]	1.361 [1.159,2.28]
Glas, Stone & Misc Material	23	130	49	48	0.192 [-0.63,1.592]	0.189 [-0.608,1.905]	1.453 [0.442,1.8]	1.279 [0.977,1.797]
Primary Metals	24	86	19	19	-0.37 [-1.877,2.356]		1.566 [1.18,1.682]	1.8 [0.966,2.073]
Metal Products	25	241	58	58	0.254 [-0.308,1.135]	0.502 [-0.177,1.496]	1.561 [0.514,2.048]	0.981 [0.98,1.962]
Electronic Components	26	145	7	7	1.283 [-3.506,2.429]	1.522 [-2.92,3.465]	1.306 [1.276,2.815]	1.296 [1.275,2.05]
Electronic Motors	27	171	27	27	-0.105 [-0.573,1.891]	0.113 [-0.366,1.951]	1.586 [0.974,2.001]	1.937 [0.977,2.217]
Machinery Manufacturing	28	415	48	47			1.708 [1.014,1.955]	1.645 [0.989,2.097]
Motor Vehicle Components	29	51	7	7	1.481 [-3.014,1.99]	-0.479 [-3.222,2.681]	1.597 [0.421,4.329]	1.566 [0.006,5.554]
Transportation Systems	30	40	2	2		-17.084 [-1.989,7.619]		3.039 [0.355,4.942]
Toys, Sports & Leisure Tools	32	131	7	7	1.183 [-0.666,3.272]	0.426 [-0.597,3.197]	1.37 [-0.038,3.875]	1.596 [0.639,2.206]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 24: Detailed GMM Estimates of the Macro Elasticity for France (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups (a)	(b)	(c)	MC2 1-step GMM (1b)	MC2 2-step GMM (1c)	MC2 & MC3 1-step GMM (2b)	MC2 & MC3 2-step GMM (2c)
Food Products	10	245	156	155	0.585 [-0.021,1.461]	0.322 [-0.147,1.637]	1.556 [1.413,1.71]	0.965 [0.233,2.549]
Alcohol & Soft Drinks	11	26	18	18	1.213 [1.007,1.782]	2.285 [1.032,3.056]	2.282 [1.285,2.46]	1.683 [1.002,3.024]
Tobacco	12	5	0	0				
Textiles Manufacturing	13	139	36	36	0.237 [0.06,1.818]	0.153 [0.126,1.702]	0.175 [-0.08,2.063]	0.533 [0.502,1.628]
Apparel Manufacturing	14	118	9	9			1.422 [0.498,2.147]	1.513 [1.169,2.285]
Leather & Footwear Manufacturing	15	38	11	11	4.43 [-1.737,5.735]	-2.118 [-2.624,4.663]	1.658 [1.375,3.561]	1.791 [0.459,3.156]
Wood	16	39	23	23	0.032 [-0.465,3.043]	0.073 [-0.163,3.564]	1.372 [0.654,1.492]	1.156 [1.028,2.433]
Paper	17	51	27	27	0.833 [-0.535,2.42]	1.099 [-0.206,2.95]	1.571 [1.404,1.627]	0.986 [0.991,1.678]
Chemical Manufacturing	20	452	113	112		-0.05 [-0.809,1.437]	1.538 [1.237,1.905]	2.142 [0.961,2.199]
Rubber & Plastic	22	97	47	46	1.007 [-0.12,2.872]	1.699 [0.035,3.023]	1.454 [1.011,2.627]	1.678 [1.178,2.854]
Glas, Stone & Misc Material	23	130	52	51	0.603 [-0.301,1.623]		1.845 [1.361,1.952]	0.986 [1.108,2.131]
Primary Metals	24	86	20	20	-0.576 [-1.057,2.267]	1.918 [-0.465,2.662]	1.84 [-1.563,2.446]	1.949 [-0.664,3.524]
Metal Products	25	240	86	86		-0.076 [-0.377,1.093]	1.575 [1.172,1.639]	1.603 [0.985,1.855]
Electronic Components	26	145	3	3	2.472 [-0.897,4.938]	-0.019 [-0.868,5.437]	-0.235 [-1.064,10.426]	0.142 [-0.709,10.919]
Electronic Motors	27	171	29	27			1.334 [0.64,2.072]	1.158 [0.699,2.224]
Machinery Manufacturing	28	415	40	39	1.104 [-0.238,1.728]	1.305 [-0.249,1.843]	1.506 [0.989,1.861]	1.009 [0.989,2.242]
Motor Vehicle Components	29	51	10	9	1.074 [-2.839,3.873]		2.886 [1.417,3.182]	2.155 [1.341,4.336]
Transportation Systems	30	40	2	2			1.882 [1.2,4.486]	1.343 [1.135,6.136]
Toys, Sports & Leisure Tools	32	131	19	19	1.211 [-0.448,2.082]	1.294 [-0.011,2.136]	1.514 [0.985,3.628]	1.381 [0.711,2.398]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 25: Detailed GMM Estimates of the Macro Elasticity for Ireland (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
		(a)	(b)	(c)	1-step GMM (1b)	2-step GMM (1c)	1-step GMM (2b)	2-step GMM (2c)
Food Products	10	245	43	43	1.977 [0.041,2.492]	1.867 [0.173,2.353]	1.578 [1.43,2.1]	1.815 [1.17,2.43]
Alcohol & Soft Drinks	11	26	3	3	8.229 [-3.779,12.198]	3.336 [-3.552,9.488]	-10.852 [-2.499,11.544]	
Tobacco	12	5	1	1				
Textiles Manufacturing	13	139	6	6		0.189 [-4.693,2.447]	1.483 [1.114,3.376]	1.197 [1.129,3.377]
Apparel Manufacturing	14	118	6	5	13.176 [-1.513,2.897]	-3.45 [-0.677,2.674]	7.513 [-2.956,4.631]	1.131 [-0.992,3.472]
Leather & Footwear Manufacturing	15	38	0	0				
Wood	16	39	7	7	1.434 [0.073,3.36]	2.215 [0.386,3.484]	1.768 [1.011,3.349]	1.612 [0.993,3.401]
Paper	17	51	14	14	1.582 [-0.879,2.701]	1.094 [-0.624,2.476]	1.093 [1.088,1.321]	1.08 [1.077,1.513]
Chemical Manufacturing	20	451	10	10	-0.784 [-1.193,0.721]		1.378 [0.537,1.606]	1.603 [0.97,1.859]
Rubber & Plastic	22	97	10	10	-2.292 [-2.795,1.676]	-2.674 [-2.013,2.659]	3.279 [0.018,2.606]	3.754 [-0.438,3.644]
Glas, Stone & Misc Material	23	130	13	13	1.992 [-0.099,2.988]	2.214 [0.052,2.751]	1.568 [0.26,2.713]	1.163 [0.976,2.582]
Primary Metals	24	86	3	3	-3.267 [-6.314,5.233]	2.012 [-6.807,7.428]	2.119 [0.306,4.953]	2.889 [0.327,4.641]
Metal Products	25	241	16	16			1.686 [0.135,12.352]	2.925 [0.196,9.885]
Electronic Components	26	145	1	1				
Electronic Motors	27	171	2	2	1.171 [-1.077,4.959]	1.502 [-2.098,2.717]	1.15 [-7.81,3.704]	1.267 [-1.851,2.037]
Machinery Manufacturing	28	415	1	1				
Motor Vehicle Components	29	51	2	2	2.201 [-3.705,31.465]	3.406 [-3.082,11.612]	1.017 [0.527,31.778]	1.548 [0.978,8.756]
Transportation Systems	30	40	0	0				
Toys, Sports & Leisure Tools	32	131	2	2	1.228 [-1.878,28.857]	3.271 [-5.779,17.718]	1.3 [-25.707,19.096]	

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 26: Detailed GMM Estimates of the Macro Elasticity for Italy (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups (a)	(b)	(c)	MC2 1-step GMM (1b)	MC2 2-step GMM (1c)	MC2 & MC3 1-step GMM (2b)	MC2 & MC3 2-step GMM (2c)
Food	10	245	185	185	-0.067	0.134	1.905	1.045
Products					[-1.318,1.293]	[-1.414,1.555]	[1.019,2.787]	[1.045,2.827]
Alcohol &	11	26	19	19	1.525		1.611	2.053
Soft Drinks					[-1.09,2.645]		[1.319,1.846]	[1.026,2.383]
Tobacco	12	5	1	1				
Textiles	13	139	82	81	-0.25	-0.021	1.568	1.522
Manufacturing					[-0.664,0.457]	[-0.758,0.521]	[1.015,1.755]	[1.014,1.845]
Apparel	14	118	59	58	-0.128		1.482	1.015
Manufacturing					[-0.337,0.536]		[0.386,1.555]	[0.986,1.881]
Leather & Footwear	15	38	17	17	0.148	0.27	1.517	1.475
Manufacturing					[-0.453,1.522]	[-0.421,1.815]	[1.4,1.589]	[1.294,1.897]
Wood	16	39	33	33	0.581	0.417	0.297	1.217
					[-0.56,1.2]	[-0.556,1.789]	[0.13,1.184]	[0.992,1.31]
Paper	17	51	40	40	-1.226		2.069	1.437
					[-1.736,1.176]		[1.565,2.082]	[1.216,1.764]
Chemical	20	452	162	160	1.084	-0.261	1.506	1.496
Manufacturing					[-0.416,1.28]	[-0.549,1.425]	[1.014,1.786]	[0.984,2.117]
Rubber &	22	97	69	69	1.015	0.397	1.01	-0.345
Plastic					[-0.016,1.23]	[-0.168,1.47]	[-0.099,1.386]	[0.027,1.852]
Glas, Stone &	23	130	89	89	1.123		1.435	1.315
Misc Material					[-0.116,1.607]		[1.362,1.6]	[1.286,1.595]
Primary	24	86	47	47		0.065	1.606	1.718
Metals						[-1.121,1.56]	[0.419,1.721]	[1.137,1.876]
Metal	25	241	139	138	0.492	0.482	1.724	1.608
Products					[0.068,1.088]	[-0.121,1.265]	[1.016,1.834]	[1.021,1.87]
Electronic	26	145	18	18			1.522	1.761
Components							[1.251,2.73]	[1.165,1.767]
Electronic	27	171	53	51	-0.325	0.042	1.558	1.013
Motors					[-0.692,1.114]	[-0.741,1.508]	[1.07,1.646]	[0.985,1.913]
Machinery	28	415	122	120		0.437	1.502	0.989
Manufacturing						[-0.48,1.286]	[1.341,1.613]	[0.982,2.113]
Motor Vehicle	29	51	21	21	-1.478	-0.923	-7.125	1.01
Components					[-1.981,1.828]	[-1.648,2.272]	[-6.575,3.478]	[-4.259,4.019]
Transportation	30	40	17	16	0.142		-0.889	-0.782
Systems					[-0.942,2.057]		[0.283,2.885]	[-1.059,2.29]
Toys, Sports &	32	131	29	28	0.357	0.526	-0.954	0.271
Leisure Tools					[0.065,1.759]	[0.038,1.765]	[-0.646,2.477]	[-0.341,2.612]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 27: Detailed GMM Estimates of the Macro Elasticity for the Netherlands (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
		(a)	(b)	(c)	1-step GMM (1b)	2-step GMM (1c)	1-step GMM (2b)	2-step GMM (2c)
Food Products	10	245	76	75			1.641 [1.067,1.718]	1.641 [1.007,1.787]
Alcohol & Soft Drinks	11	26	7	7			1.245 [1.167,3.544]	1.253 [1.223,1.417]
Tobacco	12	5	1	1				
Textiles Manufacturing	13	139	3	3			1.326 [-2.22,1.777]	-0.033 [-0.515,2.328]
Apparel Manufacturing	14	118	0	0				
Leather & Footwear Manufacturing	15	38	0	0				
Wood	16	39	1	1				
Paper	17	51	8	8	1.286 [-3.876,12.555]	0.652 [-4.473,11.228]	3.791 [-1.701,23.689]	3.118 [1.277,21.238]
Chemical Manufacturing	20	452	28	28		0.354 [-1.179,1.796]	1.685 [-0.49,2.271]	1.414 [0.971,2.308]
Rubber & Plastic	22	97	10	10	0.077 [-2.459,2.096]	-0.037 [-1.829,3.003]	0.329 [0.368,2.621]	1.599 [0.977,1.879]
Glas, Stone & Misc Material	23	130	11	10	6.087 [-2.721,11.909]	3.458 [-5.749,9.697]	3.136 [-3.52,8.998]	2.096 [0.273,5.685]
Primary Metals	24	86	3	3	9.345 [-7.618,16.765]	3.568 [-5.399,16.417]	8.082 [1.014,12.877]	12.432 [1.017,16.263]
Metal Products	25	241	5	5	1.448 [-1.23,4.674]	1.269 [-1.225,4.731]	1.154 [0.996,4.943]	1.959 [0.832,4.793]
Electronic Components	26	145	1	1				
Electronic Motors	27	171	0	0				
Machinery Manufacturing	28	415	2	2	-28.226 [-33.666,2.439]	-24.567 [-30.354,3.183]		
Motor Vehicle Components	29	51	2	2	4.527 [-5.459,16.861]	1.779 [-5.463,13.522]	2.43 [-2.565,15.986]	1.218 [-1.324,11.381]
Transportation Systems	30	40	2	2			19.047 [-16.927,26.405]	3.241 [-8.126,21.112]
Toys, Sports & Leisure Tools	32	131	3	2		1.624 [-6.639,8.887]	1.132 [-1.096,14.17]	0.836 [1.005,11.2]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 28: Detailed GMM Estimates of the Macro Elasticity for Portugal (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
		(a)	(b)	(c)	1-step GMM (1b)	2-step GMM (1c)	1-step GMM (2b)	2-step GMM (2c)
Food Products	10	245	116	116	1.05 [0.002,2.435]		1.94 [1.344,3.795]	2.338 [1.05,3.601]
Alcohol & Soft Drinks	11	26	10	9		1.048 [-2.004,2.665]	1.409 [1.204,2.741]	1.515 [1.034,2.217]
Tobacco	12	5	3	3			1.266 [1.109,1.776]	1.114 [-0.029,2.554]
Textiles Manufacturing	13	139	47	46	0.321 [-0.856,1.85]		1.295 [1.261,1.757]	1.253 [1.015,2.157]
Apparel Manufacturing	14	118	29	29	-1.43 [-0.863,1.589]		1.615 [1.02,2.204]	3.639 [0.018,3.839]
Leather & Footwear Manufacturing	15	38	7	6	2.11 [-3.99,2.506]		2.076 [-2.685,2.972]	1.597 [-0.489,3.016]
Wood	16	39	25	25	0.746 [-0.74,1.779]		1.655 [1.018,2.595]	0.983 [0.981,3.148]
Paper	17	51	25	25	0.713 [-0.996,2.064]	1.47 [-0.749,2.342]	1.363 [0.538,1.599]	1.026 [0.986,1.903]
Chemical Manufacturing	20	452	105	102			1.625 [1.307,1.702]	1.637 [0.989,1.879]
Rubber & Plastic	22	97	39	38	-0.155 [-0.608,0.735]		1.747 [1.013,1.818]	1.651 [0.471,2.457]
Glas, Stone & Misc Material	23	130	56	56	1.418 [0.554,2.208]	1.992 [0.315,2.229]	1.804 [1.024,2.168]	2.467 [1.07,3.024]
Primary Metals	24	86	16	16	-2.313 [-3.533,1.442]	-3.231 [-5.249,0.85]	1.021 [1.016,2.382]	1.652 [0.527,2.97]
Metal Products	25	241	85	84		0.444 [-0.322,1.287]	1.56 [1.154,1.639]	1.666 [1.278,1.996]
Electronic Components	26	145	6	6	2.309 [-1.864,4.026]	1.006 [-2.202,4.605]	2.281 [1.015,2.8]	1.543 [0.889,4.007]
Electronic Motors	27	171	20	20	-0.289 [-1.696,1.217]	0.179 [-1.483,1.897]	1.51 [1.312,2.696]	2.359 [1.01,3.258]
Machinery Manufacturing	28	415	60	58	1.383 [-4.851,2.106]		1.433 [1.375,2.817]	1.633 [1.042,3.326]
Motor Vehicle Components	29	51	11	11	1 [-0.66,3.357]	1.337 [-0.397,2.982]	1.063 [1.045,1.5]	1.05 [1.041,2.329]
Transportation Systems	30	40	5	5			1.495 [0.418,8.81]	1.499 [0.459,3.276]
Toys, Sports & Leisure Tools	32	131	14	14	-0.218 [-1.515,1.465]	-0.069 [-1.124,1.695]	1.02 [-0.178,2.649]	1.013 [0.068,2.608]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 29: Detailed GMM Estimates of the Macro Elasticity for Sweden (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups (a)	(b)	(c)	MC2 1-step GMM (1b)	MC2 2-step GMM (1c)	MC2 & MC3 1-step GMM (2b)	MC2 & MC3 2-step GMM (2c)
Food Products	10	245	100	98		1.154 [-0.455,1.482]	1.567 [0.35,1.638]	1.777 [1.04,2.144]
Alcohol & Soft Drinks	11	26	10	10	-0.307 [-4.946,12.423]		1.248 [-20.52,1.629]	1.552 [-0.512,2.109]
Tobacco	12	5	3	3		5.465 [-6.265,12.115]	1.981 [-7.608,10.727]	6.306 [-1.965,13.077]
Textiles Manufacturing	13	139	7	6	1.669 [-2.192,3.436]	0.926 [-1.617,3.003]	1.006 [-3.96,5.263]	1.398 [-3.244,3.525]
Apparel Manufacturing	14	118	0	0				
Leather & Footwear Manufacturing	15	38	1	1				
Wood	16	39	12	12	-0.283 [-3.095,5.379]		-0.579 [-5.012,5.602]	1.341 [0.21,4.398]
Paper	17	51	21	21	-0.577 [-1.863,1.406]	0.403 [-1.782,2.816]	1.639 [1.013,1.664]	1.55 [1.09,1.698]
Chemical Manufacturing	20	452	36	36			1.626 [1.104,1.781]	1.655 [1.021,3.3]
Rubber & Plastic	22	97	29	29			1.722 [1.505,2.034]	2.126 [1.011,2.674]
Glas, Stone & Misc Material	23	130	36	36	0.915 [-0.621,1.87]	1.093 [-0.719,1.745]	1.498 [1.011,2.93]	1.931 [0.379,2.943]
Primary Metals	24	86	14	14	2.859 [-3.554,3.782]	1.535 [-2.082,3.108]	2.743 [-1.704,3.716]	1.614 [0.175,3.244]
Metal Products	25	241	43	39	0.763 [-0.484,1]	0.665 [-0.608,1.045]	1.047 [1.011,1.623]	1.363 [0.973,1.96]
Electronic Components	26	145	2	2	1.535 [-1.976,4.385]	0.458 [-1.637,4.285]	-1.258 [-2.199,1.003]	-0.996 [-1.195,1.823]
Electronic Motors	27	171	12	11	1 [-0.938,1.823]		0.987 [0.223,1.766]	1.213 [0.287,2.251]
Machinery Manufacturing	28	415	23	23	1.138 [0.011,1.25]	0.713 [-0.305,1.384]	1.217 [0.749,1.725]	1.547 [0.825,2.363]
Motor Vehicle Components	29	51	12	12	3.016 [-1.525,6.189]	2.877 [-2.177,4.591]	1.292 [1.22,6.403]	1.164 [1.01,3.115]
Transportation Systems	30	40	5	5	-9.204 [-14.059,8.907]	-0.372 [-5.331,11.1]	-6.95 [-13.376,9.747]	-4.463 [-7.661,10.049]
Toys, Sports & Leisure Tools	32	131	6	6	3.751 [-1.317,5.654]	4.112 [-0.817,5.391]	1.233 [1.106,5.486]	1.428 [1.08,5.208]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

Table 30: Detailed GMM Estimates of the Macro Elasticity for United Kingdom (1995-2012), at NACE 2-digit Level

Sector	NACE	Number of Consistent Product Groups			MC2		MC2 & MC3	
		(a)	(b)	(c)	1-step GMM (1b)	2-step GMM (1c)	1-step GMM (2b)	2-step GMM (2c)
Food Products	10	245	145	142	0.935 [-0.327,2.181]	1.316 [-0.199,2.233]	1.483 [1.017,1.954]	1.921 [1.045,2.868]
Alcohol & Soft Drinks	11	26	9	9	2.204 [1.018,3.275]	3.316 [1.206,4.246]	1.503 [1.018,1.687]	1.871 [1.215,3.22]
Tobacco	12	5	0	0				
Textiles Manufacturing	13	139	36	35	-0.236 [-0.673,0.774]	-0.218 [-0.935,1.269]	1.581 [1.013,1.641]	1.611 [1.283,1.781]
Apparel Manufacturing	14	118	21	19	1.04 [-0.014,1.613]	1.368 [-0.421,1.737]	1.032 [-0.077,1.737]	1.597 [0.124,2.023]
Leather & Footwear Manufacturing	15	38	9	8			1.457 [1.379,1.721]	1.397 [1.349,2.253]
Wood	16	39	13	13	2.039 [-0.543,4.113]	2.066 [-0.21,4.645]	1.839 [0.236,3.578]	1.818 [0.428,4.53]
Paper	17	51	28	27	1.393 [0.164,2.835]		1.782 [1.147,2.647]	1.57 [1.411,1.639]
Chemical Manufacturing	20	447	105	105	0.224 [-0.371,1.202]		1.595 [1.012,1.659]	1.477 [1.045,1.789]
Rubber & Plastic	22	97	49	49	0.515 [-0.203,1.689]	0.386 [-0.27,1.71]	0.56 [0.457,1.529]	1.372 [0.548,1.709]
Glas, Stone & Misc Material	23	130	61	61	0.351 [0.088,1.529]		1.415 [0.509,1.622]	1.23 [0.991,1.963]
Primary Metals	24	86	20	19	-0.716 [-1.921,1.211]	-0.563 [-2.028,1.504]	1.445 [1.013,1.524]	1.583 [1.009,1.932]
Metal Products	25	240	70	68		0.605 [0.033,1.148]	1.422 [1.336,1.491]	1.245 [1.033,2.758]
Electronic Components	26	144	13	13	0.089 [-1.984,2.109]	0.492 [-1.854,2.717]	2.408 [1.306,3.684]	2.75 [1.316,3.594]
Electronic Motors	27	171	38	38	1 [0.012,1.653]	0.423 [-0.142,1.76]	1.168 [0.367,1.735]	1.54 [0.614,1.938]
Machinery Manufacturing	28	415	41	41			1.459 [1.208,1.987]	1.324 [1.054,2.629]
Motor Vehicle Components	29	51	15	14	1.106 [-3.497,4.493]	2.442 [-3.044,4.177]	1.785 [-6.122,4.157]	2.089 [-3.572,3.287]
Transportation Systems	30	36	3	3	-0.198 [-5.841,8.892]	-0.892 [-2.477,6.366]	1.147 [-3.904,19.711]	1.15 [0.16,3.689]
Toys, Sports & Leisure Tools	32	131	19	19			1.61 [1.082,1.925]	2.646 [1.078,3.01]

Note: Columns (1b) and (1c) report estimates for the macro elasticity ω from Eq. (29) using the moment condition MC1 as explained in Section (3.1), while column (2b) and (2c) report estimates for the macro elasticity ω from a joint system of Eq. (29) and Eq. (33) using two moment conditions, namely MC1 and MC2 and the restriction $\rho^j_{2g} = \rho^j_{1g}/\rho^j_F$ as explained in Section (3.1). The 2-step GMM estimates were obtained by allowing for heteroscedasticity across import partners and consistent product groups (column (1c)) and across import partners and consistent product groups (MC1) as well as across consistent product groups within broad sectors (MC2) (column(4)). Values in parentheses are the 5^{th} and 95^{th} percentile confidence interval, calculated from 1000 stratified bootstrap samples (see Section 4.1, page 19 for details). The full set of consistent product groups for the 1995-2012 period in column (a) equals 2662. The sum of consistent product groups in column (b)/(c) refers to the sum of product groups in Table (3) for which a 1-step GMM/ 2-step GMM estimate for σ could be identified.

B.3 Bootstrap Test Results at NACE 2-digit level: Robustness Check 1

Table 31: Bootstrap Test for Austria (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM, ω from 1-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM, ω from 2-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	76	1.563	69	66	86.84	75	1.493	71	27	36.00
Alcohol & Soft Drinks	13	1.335	13	5	38.46	13	1.205	12	9	69.23
Tobacco	0					0				
Textiles Manufacturing	6	1.535	5	4	66.67	5	-0.102	5	3	60.00
Apparel Manufacturing	11	1.390	10	0	0.00	11	1.553	10	2	18.18
Leather & Footwear Manufacturing	2					2				
Wood	15	0.644	14	13	86.67	15	1.028	15	10	66.67
Paper	10	0.482	10	10	100.00	10	1.392	10	10	100.00
Chemical Manufacturing	17	2.082	15	6	35.29	17	1.635	16	11	64.71
Rubber & Plastic	16	1.393	16	15	93.75	16	1.660	16	15	93.75
Glas, Stone & Misc Material	24	1.016	23	24	100.00	24	1.303	24	23	95.83
Primary Metals	4	1.146	4	4	100.00	4	1.241	4	4	100.00
Metal Products	24	1.659	23	22	91.67	24	1.025	24	23	95.83
Electronic Components	0					0				
Electronic Motors	8	1.176	7	0	0.00	8	1.125	8	0	0.00
Machinery Manufacturing	8	1.560	8	6	75.00	7	1.273	7	4	57.14
Motor Vehicle Components	5	2.345	3	1	20.00	5	1.524	5	2	40.00
Transportation Systems	0					0				
Toys, Sports & Leisure Tools	3	1.545	3	0	0.00	3	1.566	3	0	0.00
	242		223	176	72.73	239		230	143	59.83

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 17. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 17. The last row gives the respective column sums.

Table 32: Bootstrap Test for Belgium-Luxembourg (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	64	1.537	61	61	95.31	63	1.503	61	60	95.24
Alcohol & Soft Drinks	5	1.210	5	1	20.00	5	1.120	4	3	60.00
Tobacco	1					1				
Textiles Manufacturing	7	2.246	4	4	57.14	7	1.233	7	7	100.00
Apparel Manufacturing	0					0				
Leather & Footwear Manufacturing	0					0				
Wood	9	1.011	9	9	100.00	9	1.183	9	9	100.00
Paper	15	1.707	14	14	93.33	14	1.512	14	14	100.00
Chemical Manufacturing	25	1.656	24	23	92.00	24	1.726	23	22	91.67
Rubber & Plastic	11	1.430	11	7	63.64	11	1.630	11	11	100.00
Glas, Stone & Misc Material	18	1.441	16	12	66.67	18	1.167	17	12	66.67
Primary Metals	5	1.059	4	1	20.00	5	3.498	2	1	20.00
Metal Products	19	1.212	18	17	89.47	19	1.007	16	17	89.47
Electronic Components	0					0				
Electronic Motors	1					1				
Machinery Manufacturing	0					0				
Motor Vehicle Components	1					1				
Transportation Systems	0					0				
Toys, Sports & Leisure Tools	1					1				
	182		166	149	81.87	179		164	156	87.15

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 18. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 18. The last row gives the respective column sums.

Table 33: Bootstrap Test for Germany (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM, ω from 1-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM, ω from 2-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	161	2.017	152	141	87.58	161	2.321	151	134	83.23
Alcohol & Soft Drinks	11	1.657	11	8	72.73	11	1.578	11	11	100.00
Tobacco	3	1.344	3	3	100.00	3	1.342	3	3	100.00
Textiles Manufacturing	28	1.322	28	28	100.00	27	1.483	27	27	100.00
Apparel Manufacturing	11	1.499	9	4	36.36	11	1.473	10	4	36.36
Leather & Footwear Manufacturing	3	1.015	3	3	100.00	2				
Wood	19	2.033	15	10	52.63	19	2.086	16	14	73.68
Paper	32	1.405	32	32	100.00	32	0.657	32	32	100.00
Chemical Manufacturing	106	1.602	95	87	82.08	106	1.479	101	86	81.13
Rubber & Plastic	59	1.620	56	56	94.92	59	1.550	57	57	96.61
Glas, Stone & Misc Material	78	1.612	73	72	92.31	78	1.660	76	71	91.03
Primary Metals	34	1.012	32	34	100.00	32	1.288	32	25	78.12
Metal Products	137	1.719	135	122	89.05	135	1.830	132	123	91.11
Electronic Components	20	1.649	18	12	60.00	19	2.892	12	6	31.58
Electronic Motors	59	1.271	58	54	91.53	55	0.988	55	51	92.73
Machinery Manufacturing	123	1.358	123	123	100.00	121	1.811	121	98	80.99
Motor Vehicle Components	22	0.442	22	22	100.00	22	1.452	22	22	100.00
Transportation Systems	6	1.383	6	4	66.67	6	1.272	6	6	100.00
Toys, Sports & Leisure Tools	19	0.867	19	18	94.74	19	1.283	19	18	94.74
	931		890	833	89.47	918		883	788	85.84

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 19. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 19. The last row gives the respective column sums.

Table 34: Bootstrap Test for Denmark (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	118	1.715	99	96	81.36	116	1.525	109	107	92.24
Alcohol & Soft Drinks	9	-2.788	9	3	33.33	8	-3.466	8	5	62.50
Tobacco	3	8.505	0	0	0.00	3	3.152	2	0	0.00
Textiles Manufacturing	10	1.020	8	9	90.00	10	-7.240	10	10	100.00
Apparel Manufacturing	1					1				
Leather & Footwear Manufacturing	3	0.049	3	3	100.00	2				
Wood	7	0.451	7	5	71.43	7	1.332	7	6	85.71
Paper	10	1.322	10	9	90.00	10	1.314	10	10	100.00
Chemical Manufacturing	55	1.024	52	29	52.73	54	1.029	51	39	72.22
Rubber & Plastic	29	0.004	28	27	93.10	29	-0.682	28	28	96.55
Glas, Stone & Misc Material	28	1.804	21	21	75.00	28	1.652	25	23	82.14
Primary Metals	11	1.271	11	9	81.82	11	1.460	10	10	90.91
Metal Products	37	0.468	35	20	54.05	35	-0.143	35	32	91.43
Electronic Components	8	1.007	7	7	87.50	7	1.311	7	6	85.71
Electronic Motors	14	1.345	13	13	92.86	13	1.638	13	11	84.62
Machinery Manufacturing	29	2.024	26	27	93.10	29	1.496	29	24	82.76
Motor Vehicle Components	3	1.133	3	2	66.67	3	1.134	3	2	66.67
Transportation Systems	3	1.521	3	2	66.67	3	1.339	3	2	66.67
Toys, Sports & Leisure Tools	5	1.143	4	2	40.00	5	1.250	4	2	40.00
	383		339	284	74.15	374		354	317	84.76

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 20. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 20. The last row gives the respective column sums.

Table 35: Bootstrap Test for Greece (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	89	1.615	75	78	87.64	88	0.929	87	59	67.05
Alcohol & Soft Drinks	11	1.824	8	6	54.55	11	1.883	10	4	36.36
Tobacco	2					2				
Textiles Manufacturing	13	1.283	12	11	84.62	13	1.318	13	6	46.15
Apparel Manufacturing	15	2.165	13	1	6.67	14	1.742	13	10	71.43
Leather & Footwear Manufacturing	8	1.830	7	2	25.00	8	4.835	2	3	37.50
Wood	13	1.362	13	13	100.00	13	1.534	12	12	92.31
Paper	19	1.687	17	5	26.32	19	1.700	18	10	52.63
Chemical Manufacturing	30	1.591	30	8	26.67	29	1.752	27	12	41.38
Rubber & Plastic	26	1.676	24	12	46.15	26	1.739	25	6	23.08
Glas, Stone & Misc Material	19	1.357	15	6	31.58	17	1.814	15	2	11.76
Primary Metals	7	0.466	7	7	100.00	7	1.444	7	7	100.00
Metal Products	27	1.592	24	21	77.78	27	1.531	26	17	62.96
Electronic Components	0					0				
Electronic Motors	18	1.620	14	14	77.78	18	1.382	18	16	88.89
Machinery Manufacturing	19	2.102	17	16	84.21	19	2.368	16	8	42.11
Motor Vehicle Components	4	1.730	3	0	0.00	4	0.719	4	0	0.00
Transportation Systems	1					1				
Toys, Sports & Leisure Tools	3	1.045	3	1	33.33	2				
	324		282	201	62.04	318		293	172	54.09

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 21. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 21. The last row gives the respective column sums.

Table 36: Bootstrap Test for Spain (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	149	1.629	131	127	85.23	148	1.660	140	73	49.32
Alcohol & Soft Drinks	18	1.459	17	12	66.67	17	1.725	17	6	35.29
Tobacco	2					2				
Textiles Manufacturing	57	1.146	51	23	40.35	55	1.432	54	52	94.55
Apparel Manufacturing	34	0.056	29	29	85.29	30	0.626	29	22	73.33
Leather & Footwear Manufacturing	9	1.010	9	2	22.22	9	0.844	9	3	33.33
Wood	29	0.634	26	22	75.86	29	2.021	22	12	41.38
Paper	28	1.236	25	28	100.00	28	1.300	28	26	92.86
Chemical Manufacturing	131	1.573	119	108	82.44	130	1.534	125	118	90.77
Rubber & Plastic	63	1.568	57	56	88.89	63	1.527	61	62	98.41
Glas, Stone & Misc Material	63	1.450	57	45	71.43	62	2.080	50	10	16.13
Primary Metals	23	1.034	21	17	73.91	23	1.541	22	20	86.96
Metal Products	114	1.256	102	98	85.96	111	0.988	110	99	89.19
Electronic Components	11	1.680	7	6	54.55	11	1.645	8	3	27.27
Electronic Motors	37	1.291	34	31	83.78	35	1.245	34	29	82.86
Machinery Manufacturing	83	1.726	73	61	73.49	79	1.015	75	61	77.22
Motor Vehicle Components	12	1.014	12	11	91.67	12	0.986	12	10	83.33
Transportation Systems	2					2				
Toys, Sports & Leisure Tools	21	0.133	21	15	71.43	21	1.267	21	12	57.14
	886		791	691	77.99	867		817	618	71.28

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 22. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 22. The last row gives the respective column sums.

Table 37: Bootstrap Test for Finland (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	133	1.663	124	117	87.97	131	2.130	121	69	52.67
Alcohol & Soft Drinks	13	1.644	11	4	30.77	14	1.637	13	10	71.43
Tobacco	2					2				
Textiles Manufacturing	34	1.611	32	32	94.12	34	1.380	32	34	100.00
Apparel Manufacturing	20	2.080	16	12	60.00	19	1.590	19	15	78.95
Leather & Footwear Manufacturing	9	0.969	8	0	0.00	9	1.822	9	3	33.33
Wood	16	-0.360	15	0	0.00	16	3.063	11	1	6.25
Paper	27	2.089	22	16	59.26	26	2.194	21	13	50.00
Chemical Manufacturing	69	1.796	59	45	65.22	68	0.943	67	40	58.82
Rubber & Plastic	46	1.154	41	38	82.61	45	1.361	45	36	80.00
Glas, Stone & Misc Material	49	1.453	41	43	87.76	48	1.279	47	46	95.83
Primary Metals	19	1.566	16	19	100.00	19	1.800	19	18	94.74
Metal Products	58	1.561	53	34	58.62	58	0.981	57	37	63.79
Electronic Components	7	1.306	6	3	42.86	7	1.296	6	5	71.43
Electronic Motors	27	1.586	26	23	85.19	27	1.937	26	23	85.19
Machinery Manufacturing	48	1.708	39	35	72.92	47	1.645	43	40	85.11
Motor Vehicle Components	7	1.597	6	2	28.57	7	1.566	7	0	0.00
Transportation Systems	2					2				
Toys, Sports & Leisure Tools	7	1.370	7	0	0.00	7	1.596	7	7	100.00
	593		522	423	71.33	586		550	397	67.75

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 23. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 23. The last row gives the respective column sums.

Table 38: Bootstrap Test for France (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM, ω from 1-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM, ω from 2-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	156	1.556	148	143	91.67	155	0.965	151	123	79.35
Alcohol & Soft Drinks	18	2.282	13	5	27.78	18	1.683	18	5	27.78
Tobacco	0					0				
Textiles Manufacturing	36	0.175	35	30	83.33	36	0.533	33	35	97.22
Apparel Manufacturing	9	1.422	7	9	100.00	9	1.513	9	7	77.78
Leather & Footwear Manufacturing	11	1.658	10	5	45.45	11	1.791	11	5	45.45
Wood	23	1.372	21	21	91.30	23	1.156	21	20	86.96
Paper	27	1.571	26	26	96.30	27	0.986	27	27	100.00
Chemical Manufacturing	113	1.538	96	91	80.53	112	2.142	100	92	82.14
Rubber & Plastic	47	1.454	44	37	78.72	46	1.678	45	35	76.09
Glas, Stone & Misc Material	52	1.845	48	40	76.92	51	0.986	51	41	80.39
Primary Metals	20	1.840	16	16	80.00	20	1.949	18	9	45.00
Metal Products	86	1.575	81	74	86.05	86	1.603	81	75	87.21
Electronic Components	3	-0.235	2	0	0.00	3	0.142	3	0	0.00
Electronic Motors	29	1.334	29	25	86.21	27	1.158	26	23	85.19
Machinery Manufacturing	40	1.506	40	36	90.00	39	1.009	39	34	87.18
Motor Vehicle Components	10	2.886	9	4	40.00	9	2.155	9	2	22.22
Transportation Systems	2					2				
Toys, Sports & Leisure Tools	19	1.514	19	7	36.84	19	1.381	19	14	73.68
	701		644	569	81.17	693		661	547	78.93

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 24. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 24. The last row gives the respective column sums.

Table 39: Bootstrap Test for Ireland (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	43	1.578	39	41	95.35	43	1.815	41	36	83.72
Alcohol & Soft Drinks	3	-10.852	3	0	0.00	3		0	0	0.00
Tobacco	1					1				
Textiles Manufacturing	6	1.483	5	1	16.67	6	1.197	6	2	33.33
Apparel Manufacturing	6	7.513	1	1	16.67	5	1.131	5	1	20.00
Leather & Footwear Manufacturing	0					0				
Wood	7	1.768	6	1	14.29	7	1.612	7	3	42.86
Paper	14	1.093	14	14	100.00	14	1.080	14	14	100.00
Chemical Manufacturing	10	1.378	10	7	70.00	10	1.603	8	4	40.00
Rubber & Plastic	10	3.279	9	6	60.00	10	3.754	6	5	50.00
Glas, Stone & Misc Material	13	1.568	13	3	23.08	13	1.163	12	4	30.77
Primary Metals	3	2.119	0	0	0.00	3	2.889	1	0	0.00
Metal Products	16	1.686	14	0	0.00	16	2.925	7	0	0.00
Electronic Components	1					1				
Electronic Motors	2					2				
Machinery Manufacturing	1					1				
Motor Vehicle Components	2					2				
Transportation Systems	0					0				
Toys, Sports & Leisure Tools	2					2				
	140		114	74	52.86	139		107	69	49.64

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 25. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 25. The last row gives the respective column sums.

Table 40: Bootstrap Test for Italy (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM ω from 1-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM ω from 2-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	185	1.905	170	109	58.92	185	1.045	182	147	79.46
Alcohol & Soft Drinks	19	1.611	18	18	94.74	19	2.053	18	15	78.95
Tobacco	1					1				
Textiles Manufacturing	82	1.568	76	66	80.49	81	1.522	80	73	90.12
Apparel Manufacturing	59	1.482	56	54	91.53	58	1.015	56	52	89.66
Leather & Footwear Manufacturing	17	1.517	17	17	100.00	17	1.475	17	17	100.00
Wood	33	0.297	31	33	100.00	33	1.217	32	33	100.00
Paper	40	2.069	35	34	85.00	40	1.437	39	40	100.00
Chemical Manufacturing	162	1.506	147	127	78.40	160	1.496	154	127	79.38
Rubber & Plastic	69	1.010	65	68	98.55	69	-0.345	68	67	97.10
Glas, Stone & Misc Material	89	1.435	80	82	92.13	89	1.315	87	88	98.88
Primary Metals	47	1.606	45	46	97.87	47	1.718	47	47	100.00
Metal Products	139	1.724	129	108	77.70	138	1.608	133	124	89.86
Electronic Components	18	1.522	14	12	66.67	18	1.761	18	17	94.44
Electronic Motors	53	1.558	51	49	92.45	51	1.013	49	47	92.16
Machinery Manufacturing	122	1.502	121	117	95.90	120	0.989	119	110	91.67
Motor Vehicle Components	21	-7.125	21	16	76.19	21	1.010	21	14	66.67
Transportation Systems	17	-0.889	17	8	47.06	16	-0.782	16	15	93.75
Toys, Sports & Leisure Tools	29	-0.954	29	21	72.41	28	0.271	28	19	67.86
	1202		1122	985	81.95	1191		1164	1052	88.33

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 26. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 26. The last row gives the respective column sums.

Table 41: Bootstrap Test for the Netherlands (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	76	1.641	76	75	98.68	75	1.641	73	74	98.67
Alcohol & Soft Drinks	7	1.245	7	5	71.43	7	1.253	7	6	85.71
Tobacco	1					1				
Textiles Manufacturing	3	1.326	3	3	100.00	3	-0.033	3	3	100.00
Apparel Manufacturing	0					0				
Leather & Footwear Manufacturing	0					0				
Wood	1					1				
Paper	8	3.791	4	0	0.00	8	3.118	7	0	0.00
Chemical Manufacturing	28	1.685	25	22	78.57	28	1.414	28	22	78.57
Rubber & Plastic	10	0.329	10	9	90.00	10	1.599	10	10	100.00
Glas, Stone & Misc Material	11	3.136	7	0	0.00	10	2.096	9	0	0.00
Primary Metals	3	8.082	1	0	0.00	3	12.432	0	0	0.00
Metal Products	5	1.154	5	0	0.00	5	1.959	5	0	0.00
Electronic Components	1					1				
Electronic Motors	0					0				
Machinery Manufacturing	2					2				
Motor Vehicle Components	2					2				
Transportation Systems	2					2				
Toys, Sports & Leisure Tools	3	1.132	3	0	0.00	2				
	163		141	114	69.94	160		142	115	71.88

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 27. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 27. The last row gives the respective column sums.

Table 42: Bootstrap Test for Portugal (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM ω from 1-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM ω from 2-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	116	1.940	102	49	42.24	116	2.338	104	43	37.07
Alcohol & Soft Drinks	10	1.409	8	3	30.00	9	1.515	8	6	66.67
Tobacco	3	1.266	3	3	100.00	3	1.114	3	3	100.00
Textiles Manufacturing	47	1.295	47	45	95.74	46	1.253	46	41	89.13
Apparel Manufacturing	29	1.615	24	15	51.72	29	3.639	7	2	6.90
Leather & Footwear Manufacturing	7	2.076	4	1	14.29	6	1.597	5	2	33.33
Wood	25	1.655	25	16	64.00	25	0.983	25	11	44.00
Paper	25	1.363	25	23	92.00	25	1.026	24	23	92.00
Chemical Manufacturing	105	1.625	89	73	69.52	102	1.637	94	76	74.51
Rubber & Plastic	39	1.747	37	35	89.74	38	1.651	35	26	68.42
Glas, Stone & Misc Material	56	1.804	46	32	57.14	56	2.467	35	16	28.57
Primary Metals	16	1.021	15	12	75.00	16	1.652	15	8	50.00
Metal Products	85	1.560	80	65	76.47	84	1.666	75	60	71.43
Electronic Components	6	2.281	5	0	0.00	6	1.543	5	0	0.00
Electronic Motors	20	1.510	17	12	60.00	20	2.359	18	9	45.00
Machinery Manufacturing	60	1.433	54	29	48.33	58	1.633	51	19	32.76
Motor Vehicle Components	11	1.063	10	11	100.00	11	1.050	11	10	90.91
Transportation Systems	5	1.495	4	1	20.00	5	1.499	4	4	80.00
Toys, Sports & Leisure Tools	14	1.020	13	6	42.86	14	1.013	14	9	64.29
	679		608	431	63.48	669		579	368	55.01

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 28. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 28. The last row gives the respective column sums.

Table 43: Bootstrap Test for Sweden (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	100	1.567	93	90	90.00	98	1.777	96	84	85.71
Alcohol & Soft Drinks	10	1.248	10	10	100.00	10	1.552	10	10	100.00
Tobacco	3	1.981	3	0	0.00	3	6.306	1	0	0.00
Textiles Manufacturing	7	1.006	7	1	14.29	6	1.398	6	4	66.67
Apparel Manufacturing	0					0				
Leather & Footwear Manufacturing	1					1				
Wood	12	-0.579	12	1	8.33	12	1.341	12	2	16.67
Paper	21	1.639	20	20	95.24	21	1.550	21	20	95.24
Chemical Manufacturing	36	1.626	30	27	75.00	36	1.655	33	10	27.78
Rubber & Plastic	29	1.722	25	22	75.86	29	2.126	23	17	58.62
Glas, Stone & Misc Material	36	1.498	29	14	38.89	36	1.931	33	15	41.67
Primary Metals	14	2.743	10	3	21.43	14	1.614	14	5	35.71
Metal Products	43	1.047	42	41	95.35	39	1.363	39	37	94.87
Electronic Components	2					2				
Electronic Motors	12	0.987	12	12	100.00	11	1.213	11	11	100.00
Machinery Manufacturing	23	1.217	20	22	95.65	23	1.547	21	17	73.91
Motor Vehicle Components	12	1.292	12	1	8.33	12	1.164	12	11	91.67
Transportation Systems	5	-6.950	5	0	0.00	5	-4.463	5	0	0.00
Toys, Sports & Leisure Tools	6	1.233	6	1	16.67	6	1.428	6	1	16.67
	372		336	265	71.24	364		343	244	67.03

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 29. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 29. The last row gives the respective column sums.

Table 44: Bootstrap Test for United Kingdom (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM, ω from 1-step GMM: $\omega < \sigma_g$	Signifi-cant	%	Number of Consistent Product Groups	ω	σ_g from 2-step GMM, ω from 2-step GMM: $\omega < \sigma_g$	Signifi-cant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	145	1.483	127	126	86.90	142	1.921	135	74	52.11
Alcohol & Soft Drinks	9	1.503	8	9	100.00	9	1.871	9	4	44.44
Tobacco	0					0				
Textiles Manufacturing	36	1.581	32	32	88.89	35	1.611	33	32	91.43
Apparel Manufacturing	21	1.032	20	20	95.24	19	1.597	18	17	89.47
Leather & Footwear Manufacturing	9	1.457	9	9	100.00	8	1.397	8	7	87.50
Wood	13	1.839	11	1	7.69	13	1.818	13	0	0.00
Paper	28	1.782	26	19	67.86	27	1.570	27	27	100.00
Chemical Manufacturing	105	1.595	91	82	78.10	105	1.477	94	92	87.62
Rubber & Plastic	49	0.560	45	47	95.92	49	1.372	48	47	95.92
Glas, Stone & Misc Material	61	1.415	58	56	91.80	61	1.230	61	51	83.61
Primary Metals	20	1.445	18	19	95.00	19	1.583	19	19	100.00
Metal Products	70	1.422	66	64	91.43	68	1.245	65	26	38.24
Electronic Components	13	2.408	8	1	7.69	13	2.750	10	1	7.69
Electronic Motors	38	1.168	36	35	92.11	38	1.540	37	33	86.84
Machinery Manufacturing	41	1.459	37	32	78.05	41	1.324	40	20	48.78
Motor Vehicle Components	15	1.785	13	5	33.33	14	2.089	11	9	64.29
Transportation Systems	3	1.147	3	0	0.00	3	1.150	3	3	100.00
Toys, Sports & Leisure Tools	19	1.610	17	15	78.95	19	2.646	13	8	42.11
	695		625	572	82.30	683		644	470	68.81

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 30. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 30. The last row gives the respective column sums.

B.4 Bootstrap Test Results at NACE 2-digit level: Robustness Check 2

Table 45: Bootstrap Test for Austria (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM, ω from 1-step GMM: $\omega < \sigma_g$ (1)	Significant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM, ω from 2-step GMM: $\omega < \sigma_g$ (1)	Significant (2)	% (3)
Food Products	76	1.563	69	40	52.63	75	1.493	71	16	21.33
Alcohol & Soft Drinks	13	1.335	13	2	15.38	13	1.205	12	6	46.15
Tobacco	0					0				
Textiles Manufacturing	6	1.535	5	2	33.33	5	-0.102	5	2	40.00
Apparel Manufacturing	11	1.390	10	0	0.00	11	1.553	10	0	0.00
Leather & Footwear Manufacturing	2	1.364	2	0	0.00	2	1.387	2	0	0.00
Wood	15	0.644	14	5	33.33	15	1.028	15	6	40.00
Paper	10	0.482	10	8	80.00	10	1.392	10	8	80.00
Chemical Manufacturing	17	2.082	15	5	29.41	17	1.635	16	9	52.94
Rubber & Plastic	16	1.393	16	13	81.25	16	1.660	16	13	81.25
Glas, Stone & Misc Material	24	1.016	23	14	58.33	24	1.303	24	13	54.17
Primary Metals	4	1.146	4	3	75.00	4	1.241	4	3	75.00
Metal Products	24	1.659	23	10	41.67	24	1.025	24	10	41.67
Electronic Components	0					0				
Electronic Motors	8	1.176	7	0	0.00	8	1.125	8	0	0.00
Machinery Manufacturing	8	1.560	8	3	37.50	7	1.273	7	2	28.57
Motor Vehicle Components	5	2.345	3	1	20.00	5	1.524	5	2	40.00
Transportation Systems	0					0				
Toys, Sports & Leisure Tools	3	1.545	3	0	0.00	3	1.566	3	0	0.00
	242		225	106	43.80	239		232	90	37.66

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 17. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 17. The last row gives the respective column sums.

Table 46: Bootstrap Test for Belgium-Luxembourg (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	64	1.537	61	39	60.94	63	1.503	61	39	61.90
Alcohol & Soft Drinks	5	1.210	5	0	0.00	5	1.120	4	0	0.00
Tobacco	1					1				
Textiles Manufacturing	7	2.246	4	1	14.29	7	1.233	7	4	57.14
Apparel Manufacturing	0					0				
Leather & Footwear Manufacturing	0					0				
Wood	9	1.011	9	6	66.67	9	1.183	9	6	66.67
Paper	15	1.707	14	10	66.67	14	1.512	14	12	85.71
Chemical Manufacturing	25	1.656	24	13	52.00	24	1.726	23	15	62.50
Rubber & Plastic	11	1.430	11	6	54.55	11	1.630	11	9	81.82
Glas, Stone & Misc Material	18	1.441	16	10	55.56	18	1.167	17	9	50.00
Primary Metals	5	1.059	4	1	20.00	5	3.498	2	1	20.00
Metal Products	19	1.212	18	11	57.89	19	1.007	16	11	57.89
Electronic Components	0					0				
Electronic Motors	1					1				
Machinery Manufacturing	0					0				
Motor Vehicle Components	1					1				
Transportation Systems	0					0				
Toys, Sports & Leisure Tools	1					1				
	182		166	97	53.30	179		164	106	59.22

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 18. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 18. The last row gives the respective column sums.

Table 47: Bootstrap Test for Germany (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM, ω from 1-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM, ω from 2-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	161	2.017	152	107	66.46	161	2.321	151	103	63.98
Alcohol & Soft Drinks	11	1.657	11	7	63.64	11	1.578	11	10	90.91
Tobacco	3	1.344	3	3	100.00	3	1.342	3	3	100.00
Textiles Manufacturing	28	1.322	28	20	71.43	27	1.483	27	20	74.07
Apparel Manufacturing	11	1.499	9	4	36.36	11	1.473	10	4	36.36
Leather & Footwear Manufacturing	3	1.015	3	1	33.33	2	24.338	0	1	50.00
Wood	19	2.033	15	5	26.32	19	2.086	16	11	57.89
Paper	32	1.405	32	18	56.25	32	0.657	32	21	65.62
Chemical Manufacturing	106	1.602	95	58	54.72	106	1.479	101	55	51.89
Rubber & Plastic	59	1.620	56	47	79.66	59	1.550	57	50	84.75
Glas, Stone & Misc Material	78	1.612	73	53	67.95	78	1.660	76	58	74.36
Primary Metals	34	1.012	32	17	50.00	32	1.288	32	16	50.00
Metal Products	137	1.719	135	99	72.26	135	1.830	132	100	74.07
Electronic Components	20	1.649	18	9	45.00	19	2.892	12	3	15.79
Electronic Motors	59	1.271	58	35	59.32	55	0.988	55	35	63.64
Machinery Manufacturing	123	1.358	123	83	67.48	121	1.811	121	63	52.07
Motor Vehicle Components	22	0.442	22	16	72.73	22	1.452	22	15	68.18
Transportation Systems	6	1.383	6	4	66.67	6	1.272	6	5	83.33
Toys, Sports & Leisure Tools	19	0.867	19	13	68.42	19	1.283	19	14	73.68
	931		890	599	64.34	918		883	587	63.94

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 19. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 19. The last row gives the respective column sums.

Table 48: Bootstrap Test for Denmark (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	118	1.715	99	57	48.31	116	1.525	109	56	48.28
Alcohol & Soft Drinks	9	-2.788	9	1	11.11	8	-3.466	8	3	37.50
Tobacco	3	8.505	0	0	0.00	3	3.152	2	0	0.00
Textiles Manufacturing	10	1.020	8	4	40.00	10	-7.240	10	5	50.00
Apparel Manufacturing	1					1				
Leather & Footwear Manufacturing	3	0.049	3	1	33.33	2		0	1	50.00
Wood	7	0.451	7	3	42.86	7	1.332	7	3	42.86
Paper	10	1.322	10	6	60.00	10	1.314	10	6	60.00
Chemical Manufacturing	55	1.024	52	19	34.55	54	1.029	51	22	40.74
Rubber & Plastic	29	0.004	28	12	41.38	29	-0.682	28	13	44.83
Glas, Stone & Misc Material	28	1.804	21	13	46.43	28	1.652	25	9	32.14
Primary Metals	11	1.271	11	2	18.18	11	1.460	10	2	18.18
Metal Products	37	0.468	35	9	24.32	35	-0.143	35	16	45.71
Electronic Components	8	1.007	7	3	37.50	7	1.311	7	2	28.57
Electronic Motors	14	1.345	13	5	35.71	13	1.638	13	5	38.46
Machinery Manufacturing	29	2.024	26	8	27.59	29	1.496	29	8	27.59
Motor Vehicle Components	3	1.133	3	2	66.67	3	1.134	3	0	0.00
Transportation Systems	3	1.521	3	1	33.33	3	1.339	3	0	0.00
Toys, Sports & Leisure Tools	5	1.143	4	0	0.00	5	1.250	4	0	0.00
	383		339	146	38.12	374		354	151	40.37

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 20. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 20. The last row gives the respective column sums.

Table 49: Bootstrap Test for Greece (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM ω from 1-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM ω from 2-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	89	1.615	75	42	47.19	88	0.929	87	32	36.36
Alcohol & Soft Drinks	11	1.824	8	2	18.18	11	1.883	10	2	18.18
Tobacco	2	8.284	2	0	0.00	2	7.038	2	0	0.00
Textiles Manufacturing	13	1.283	12	4	30.77	13	1.318	13	3	23.08
Apparel Manufacturing	15	2.165	13	0	0.00	14	1.742	13	3	21.43
Leather & Footwear Manufacturing	8	1.830	7	0	0.00	8	4.835	2	1	12.50
Wood	13	1.362	13	9	69.23	13	1.534	12	7	53.85
Paper	19	1.687	17	4	21.05	19	1.700	18	6	31.58
Chemical Manufacturing	30	1.591	30	3	10.00	29	1.752	27	8	27.59
Rubber & Plastic	26	1.676	24	8	30.77	26	1.739	25	2	7.69
Glas, Stone & Misc Material	19	1.357	15	3	15.79	17	1.814	15	1	5.88
Primary Metals	7	0.466	7	4	57.14	7	1.444	7	2	28.57
Metal Products	27	1.592	24	10	37.04	27	1.531	26	6	22.22
Electronic Components	0					0				
Electronic Motors	18	1.620	14	6	33.33	18	1.382	18	6	33.33
Machinery Manufacturing	19	2.102	17	10	52.63	19	2.368	16	7	36.84
Motor Vehicle Components	4	1.730	3	0	0.00	4	0.719	4	0	0.00
Transportation Systems	1					1				
Toys, Sports & Leisure Tools	3	1.045	3	0	0.00	2		0	0	0.00
	324		284	105	32.41	318		295	86	27.04

Note: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table 21. Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing source countries and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively, which correspond to column (b) and (c) in Table 21. The last row gives the respective column sums.

Table 50: Bootstrap Test for Spain (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Signifi-cant	%			$\omega < \sigma_g$	Signifi-cant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	149	1.629	131	80	53.69	148	1.660	140	48	32.43
Alcohol & Soft Drinks	18	1.459	17	4	22.22	17	1.725	17	2	11.76
Tobacco	2	1.043	1	0	0.00	2	1.193	2	0	0.00
Textiles Manufacturing	57	1.146	51	9	15.79	55	1.432	54	23	41.82
Apparel Manufacturing	34	0.056	29	3	8.82	30	0.626	29	2	6.67
Leather & Footwear Manufacturing	9	1.010	9	0	0.00	9	0.844	9	0	0.00
Wood	29	0.634	26	13	44.83	29	2.021	22	8	27.59
Paper	28	1.236	25	19	67.86	28	1.300	28	19	67.86
Chemical Manufacturing	131	1.573	119	69	52.67	130	1.534	125	77	59.23
Rubber & Plastic	63	1.568	57	34	53.97	63	1.527	61	41	65.08
Glas, Stone & Misc Material	63	1.450	57	28	44.44	62	2.080	50	5	8.06
Primary Metals	23	1.034	21	10	43.48	23	1.541	22	13	56.52
Metal Products	114	1.256	102	56	49.12	111	0.988	110	54	48.65
Electronic Components	11	1.680	7	0	0.00	11	1.645	8	0	0.00
Electronic Motors	37	1.291	34	10	27.03	35	1.245	34	7	20.00
Machinery Manufacturing	83	1.726	73	30	36.14	79	1.015	75	30	37.97
Motor Vehicle Components	12	1.014	12	1	8.33	12	0.986	12	4	33.33
Transportation Systems	2	1.099	2	0	0.00	2	1.099	2	0	0.00
Toys, Sports & Leisure Tools	21	0.133	21	7	33.33	21	1.267	21	6	28.57

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (22). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (22). The last row gives the respective column sums.

Table 51: Bootstrap Test for Finland (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM, ω from 1-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM, ω from 2-step GMM: $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	133	1.663	124	62	46.62	131	2.130	121	40	30.53
Alcohol & Soft Drinks	13	1.644	11	1	7.69	14	1.637	13	5	35.71
Tobacco	2	6.752	0	0	0.00	2	2.692	2	0	0.00
Textiles Manufacturing	34	1.611	32	19	55.88	34	1.380	32	21	61.76
Apparel Manufacturing	20	2.080	16	7	35.00	19	1.590	19	8	42.11
Leather & Footwear Manufacturing	9	0.969	8	0	0.00	9	1.822	9	2	22.22
Wood	16	-0.360	15	0	0.00	16	3.063	11	0	0.00
Paper	27	2.089	22	11	40.74	26	2.194	21	8	30.77
Chemical Manufacturing	69	1.796	59	23	33.33	68	0.943	67	22	32.35
Rubber & Plastic	46	1.154	41	17	36.96	45	1.361	45	22	48.89
Glas, Stone & Misc Material	49	1.453	41	24	48.98	48	1.279	47	27	56.25
Primary Metals	19	1.566	16	10	52.63	19	1.800	19	10	52.63
Metal Products	58	1.561	53	20	34.48	58	0.981	57	21	36.21
Electronic Components	7	1.306	6	2	28.57	7	1.296	6	2	28.57
Electronic Motors	27	1.586	26	8	29.63	27	1.937	26	11	40.74
Machinery Manufacturing	48	1.708	39	20	41.67	47	1.645	43	15	31.91
Motor Vehicle Components	7	1.597	6	1	14.29	7	1.566	7	0	0.00
Transportation Systems	2		0	2	100.00	2	3.039	2	0	0.00
Toys, Sports & Leisure Tools	7	1.370	7	0	0.00	7	1.596	7	4	57.14

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (23). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (23). The last row gives the respective column sums.

Table 52: Bootstrap Test for France (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues [a]

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM ω from 1-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM ω from 2-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	156	1.556	148	95	60.90	155	0.965	151	91	58.71
Alcohol & Soft Drinks	18	2.282	13	2	11.11	18	1.683	18	0	0.00
Tobacco	0					0				
Textiles Manufacturing	36	0.175	35	15	41.67	36	0.533	33	21	58.33
Apparel Manufacturing	9	1.422	7	3	33.33	9	1.513	9	2	22.22
Leather & Footwear Manufacturing	11	1.658	10	2	18.18	11	1.791	11	1	9.09
Wood	23	1.372	21	9	39.13	23	1.156	21	12	52.17
Paper	27	1.571	26	19	70.37	27	0.986	27	20	74.07
Chemical Manufacturing	113	1.538	96	56	49.56	112	2.142	100	57	50.89
Rubber & Plastic	47	1.454	44	32	68.09	46	1.678	45	29	63.04
Glas, Stone & Misc Material	52	1.845	48	28	53.85	51	0.986	51	27	52.94
Primary Metals	20	1.840	16	10	50.00	20	1.949	18	5	25.00
Metal Products	86	1.575	81	48	55.81	86	1.603	81	54	62.79
Electronic Components	3	-0.235	2	0	0.00	3	0.142	3	0	0.00
Electronic Motors	29	1.334	29	12	41.38	27	1.158	26	11	40.74
Machinery Manufacturing	40	1.506	40	20	50.00	39	1.009	39	18	46.15
Motor Vehicle Components	10	2.886	9	1	10.00	9	2.155	9	0	0.00
Transportation Systems	2	1.882	2	0	0.00	2	1.343	2	0	0.00
Toys, Sports & Leisure Tools	19	1.514	19	3	15.79	19	1.381	19	7	36.84

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (24). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (24). The last row gives the respective column sums.

Table 53: Bootstrap Test for Ireland (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues [a]

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM ω from 1-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)	Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM ω from 2-step GMM $\omega < \sigma_g$ (1)	Signifi-cant (2)	% (3)
Food Products	43	1.578	39	17	39.53	43	1.815	41	13	30.23
Alcohol & Soft Drinks	3	-10.852	3	0	0.00	3		0	0	0.00
Tobacco	1					1				
Textiles Manufacturing	6	1.483	5	1	16.67	6	1.197	6	1	16.67
Apparel Manufacturing	6	7.513	1	0	0.00	5	1.131	5	0	0.00
Leather & Footwear Manufacturing	0					0				
Wood	7	1.768	6	1	14.29	7	1.612	7	2	28.57
Paper	14	1.093	14	9	64.29	14	1.080	14	7	50.00
Chemical Manufacturing	10	1.378	10	3	30.00	10	1.603	8	2	20.00
Rubber & Plastic	10	3.279	9	5	50.00	10	3.754	6	4	40.00
Glas, Stone & Misc Material	13	1.568	13	2	15.38	13	1.163	12	1	7.69
Primary Metals	3	2.119	0	0	0.00	3	2.889	1	0	0.00
Metal Products	16	1.686	14	0	0.00	16	2.925	7	0	0.00
Electronic Components	1					1				
Electronic Motors	2	1.150	2	0	0.00	2	1.267	2	0	0.00
Machinery Manufacturing	1					1				
Motor Vehicle Components	2	1.017	2	0	0.00	2	1.548	2	0	0.00
Transportation Systems	0					0				
Toys, Sports & Leisure Tools	2	1.300	2	0	0.00	2		0	0	0.00

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (25). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (25). The last row gives the respective column sums.

Table 54: Bootstrap Test for Italy (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues [a]

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$ (1)	Significant (2)	% (3)			$\omega < \sigma_g$ (1)	Significant (2)	% (3)
Food Products	185	1.905	170	75	40.54	185	1.045	182	102	55.14
Alcohol & Soft Drinks	19	1.611	18	12	63.16	19	2.053	18	9	47.37
Tobacco	1					1				
Textiles Manufacturing	82	1.568	76	39	47.56	81	1.522	80	44	54.32
Apparel Manufacturing	59	1.482	56	26	44.07	58	1.015	56	27	46.55
Leather & Footwear Manufacturing	17	1.517	17	8	47.06	17	1.475	17	9	52.94
Wood	33	0.297	31	18	54.55	33	1.217	32	20	60.61
Paper	40	2.069	35	26	65.00	40	1.437	39	30	75.00
Chemical Manufacturing	162	1.506	147	84	51.85	160	1.496	154	86	53.75
Rubber & Plastic	69	1.010	65	56	81.16	69	-0.345	68	58	84.06
Glas, Stone & Misc Material	89	1.435	80	56	62.92	89	1.315	87	62	69.66
Primary Metals	47	1.606	45	28	59.57	47	1.718	47	31	65.96
Metal Products	139	1.724	129	73	52.52	138	1.608	133	79	57.25
Electronic Components	18	1.522	14	7	38.89	18	1.761	18	9	50.00
Electronic Motors	53	1.558	51	34	64.15	51	1.013	49	33	64.71
Machinery Manufacturing	122	1.502	121	83	68.03	120	0.989	119	75	62.50
Motor Vehicle Components	21	-7.125	21	10	47.62	21	1.010	21	8	38.10
Transportation Systems	17	-0.889	17	7	41.18	16	-0.782	16	7	43.75
Toys, Sports & Leisure Tools	29	-0.954	29	15	51.72	28	0.271	28	13	46.43

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (26). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (26). The last row gives the respective column sums.

Table 55: Bootstrap Test for the Netherlands (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues [a]

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	76	1.641	76	52	68.42	75	1.641	73	53	70.67
Alcohol & Soft Drinks	7	1.245	7	4	57.14	7	1.253	7	5	71.43
Tobacco	1					1				
Textiles Manufacturing	3	1.326	3	0	0.00	3	-0.033	3	0	0.00
Apparel Manufacturing	0					0				
Leather & Footwear Manufacturing	0					0				
Wood	1					1				
Paper	8	3.791	4	0	0.00	8	3.118	7	0	0.00
Chemical Manufacturing	28	1.685	25	15	53.57	28	1.414	28	16	57.14
Rubber & Plastic	10	0.329	10	7	70.00	10	1.599	10	9	90.00
Glas, Stone & Misc Material	11	3.136	7	0	0.00	10	2.096	9	0	0.00
Primary Metals	3	8.082	1	0	0.00	3	12.432	0	0	0.00
Metal Products	5	1.154	5	0	0.00	5	1.959	5	0	0.00
Electronic Components	1					1				
Electronic Motors	0					0				
Machinery Manufacturing	2		0	0	0.00	2		0	0	0.00
Motor Vehicle Components	2	2.430	2	0	0.00	2	1.218	2	0	0.00
Transportation Systems	2	19.047	0	0	0.00	2	3.241	1	0	0.00
Toys, Sports & Leisure Tools	3	1.132	3	0	0.00	2	0.836	2	0	0.00

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (27). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (27). The last row gives the respective column sums.

Table 56: Bootstrap Test for Portugal (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues [a]

Sector	Number of Consistent Product Groups (b)	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups (c)	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$ (1)	Significant (2)	% (3)			$\omega < \sigma_g$ (1)	Significant (2)	% (3)
Food Products	116	1.940	102	29	25.00	116	2.338	104	27	23.28
Alcohol & Soft Drinks	10	1.409	8	2	20.00	9	1.515	8	5	55.56
Tobacco	3	1.266	3	2	66.67	3	1.114	3	2	66.67
Textiles Manufacturing	47	1.295	47	19	40.43	46	1.253	46	17	36.96
Apparel Manufacturing	29	1.615	24	7	24.14	29	3.639	7	1	3.45
Leather & Footwear Manufacturing	7	2.076	4	1	14.29	6	1.597	5	2	33.33
Wood	25	1.655	25	13	52.00	25	0.983	25	4	16.00
Paper	25	1.363	25	19	76.00	25	1.026	24	16	64.00
Chemical Manufacturing	105	1.625	89	40	38.10	102	1.637	94	49	48.04
Rubber & Plastic	39	1.747	37	26	66.67	38	1.651	35	19	50.00
Glas, Stone & Misc Material	56	1.804	46	23	41.07	56	2.467	35	12	21.43
Primary Metals	16	1.021	15	5	31.25	16	1.652	15	3	18.75
Metal Products	85	1.560	80	34	40.00	84	1.666	75	35	41.67
Electronic Components	6	2.281	5	0	0.00	6	1.543	5	0	0.00
Electronic Motors	20	1.510	17	7	35.00	20	2.359	18	5	25.00
Machinery Manufacturing	60	1.433	54	15	25.00	58	1.633	51	9	15.52
Motor Vehicle Components	11	1.063	10	6	54.55	11	1.050	11	5	45.45
Transportation Systems	5	1.495	4	0	0.00	5	1.499	4	0	0.00
Toys, Sports & Leisure Tools	14	1.020	13	2	14.29	14	1.013	14	1	7.14

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (28). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (28). The last row gives the respective column sums.

Table 57: Bootstrap Test for Sweden (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues [a]

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	100	1.567	93	44	44.00	98	1.777	96	49	50.00
Alcohol & Soft Drinks	10	1.248	10	6	60.00	10	1.552	10	7	70.00
Tobacco	3	1.981	3	0	0.00	3	6.306	1	0	0.00
Textiles Manufacturing	7	1.006	7	1	14.29	6	1.398	6	2	33.33
Apparel Manufacturing	0					0				
Leather & Footwear Manufacturing	1					1				
Wood	12	-0.579	12	0	0.00	12	1.341	12	1	8.33
Paper	21	1.639	20	13	61.90	21	1.550	21	14	66.67
Chemical Manufacturing	36	1.626	30	14	38.89	36	1.655	33	5	13.89
Rubber & Plastic	29	1.722	25	14	48.28	29	2.126	23	11	37.93
Glas, Stone & Misc Material	36	1.498	29	11	30.56	36	1.931	33	12	33.33
Primary Metals	14	2.743	10	0	0.00	14	1.614	14	1	7.14
Metal Products	43	1.047	42	25	58.14	39	1.363	39	25	64.10
Electronic Components	2	-1.258	2	2	100.00	2	-0.996	2	2	100.00
Electronic Motors	12	0.987	12	4	33.33	11	1.213	11	2	18.18
Machinery Manufacturing	23	1.217	20	9	39.13	23	1.547	21	6	26.09
Motor Vehicle Components	12	1.292	12	0	0.00	12	1.164	12	8	66.67
Transportation Systems	5	-6.950	5	0	0.00	5	-4.463	5	0	0.00
Toys, Sports & Leisure Tools	6	1.233	6	0	0.00	6	1.428	6	0	0.00

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (29). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (29). The last row gives the respective column sums.

Table 58: Bootstrap Test for United Kingdom (1995-2012), at NACE 2-digit Level, $\alpha = 5\%$ & max. 10 % convergence issues [a]

Sector	Number of Consistent Product Groups	ω	σ_g from 1-step GMM ω from 1-step GMM			Number of Consistent Product Groups	ω	σ_g from 2-step GMM ω from 2-step GMM		
			$\omega < \sigma_g$	Significant	%			$\omega < \sigma_g$	Significant	%
	(b)		(1)	(2)	(3)	(c)		(1)	(2)	(3)
Food Products	145	1.483	127	81	55.86	142	1.921	135	57	40.14
Alcohol & Soft Drinks	9	1.503	8	5	55.56	9	1.871	9	3	33.33
Tobacco	0					0				
Textiles Manufacturing	36	1.581	32	11	30.56	35	1.611	33	10	28.57
Apparel Manufacturing	21	1.032	20	8	38.10	19	1.597	18	8	42.11
Leather & Footwear Manufacturing	9	1.457	9	6	66.67	8	1.397	8	5	62.50
Wood	13	1.839	11	1	7.69	13	1.818	13	0	0.00
Paper	28	1.782	26	11	39.29	27	1.570	27	18	66.67
Chemical Manufacturing	105	1.595	91	42	40.00	105	1.477	94	46	43.81
Rubber & Plastic	49	0.560	45	28	57.14	49	1.372	48	30	61.22
Glas, Stone & Misc Material	61	1.415	58	37	60.66	61	1.230	61	32	52.46
Primary Metals	20	1.445	18	11	55.00	19	1.583	19	12	63.16
Metal Products	70	1.422	66	32	45.71	68	1.245	65	12	17.65
Electronic Components	13	2.408	8	1	7.69	13	2.750	10	0	0.00
Electronic Motors	38	1.168	36	21	55.26	38	1.540	37	20	52.63
Machinery Manufacturing	41	1.459	37	10	24.39	41	1.324	40	6	14.63
Motor Vehicle Components	15	1.785	13	2	13.33	14	2.089	11	6	42.86
Transportation Systems	3	1.147	3	0	0.00	3	1.150	3	0	0.00
Toys, Sports & Leisure Tools	19	1.610	17	6	31.58	19	2.646	13	3	15.79

[a]: Estimates for ω were obtained using two moment conditions MC1 and MC2 and correspond to column (2b) and (2c) respectively in Table (30). Column (1) reports the number of consistent product groups for which the ω estimate is smaller than the σ estimate. Column (2) reports the number of consistent product groups for which ω is significantly lower than σ by means of a bootstrap-test at a $\alpha = 5\%$ significance level. The bootstrap test was performed on a sample of 1000 replications. Each bootstrap sample was obtained by resampling observations while fixing trading partners and consistent product groups within a sector. Column (3) gives the number of consistent product groups for which $\omega < \sigma_g$ was found as a share of total consistent product groups reported in column (b) and (c) respectively. Column (b) and (c) correspond to column (b) and (c) in Table (30). The last row gives the respective column sums.

Table 59: Bootstrap Test Results for NACE 4-digit Sectors, $\alpha = 5\%$

	1-step GMM Estimation						2-step GMM Estimation					
Sector	Median ω	Median Country	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Country	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
1011	1.382	NL	146	129	108	73.97	1.482	UK	145	138	120	82.76
1012	1.481	ES	78	62	36	46.15	2.14	UK	77	72	42	54.55
1013	1.573	IT	72	55	20	27.78	1.824	FR	69	58	25	36.23
1020	1.538	UK	37	26	12	32.43	1.581	IT	36	30	19	52.78
1031	1.669	FR	42	32	10	23.81	1.606	FI	42	30	19	45.24
1039	1.44	PT	114	106	100	87.72	1.387	EL	113	108	99	87.61
1041	1.589	FR	126	97	67	53.17	1.596	DK	126	107	65	51.59
1051	1.626	EL	98	85	67	68.37	1.493	UK	98	92	78	79.59
1061	1.626	AT	142	123	62	43.66	2.025	AT	142	122	71	50
1062	1.273	SE	62	56	30	48.39	1.52	FR	62	55	31	50
1072	1.702	IT	104	85	44	42.31	1.6	FI	103	97	63	61.17
1073	-23.44	FR	19	3	0	0	1.398	FR	18	3	0	0
1081	1.424	SE	39	18	3	7.69	1.67	FI	37	20	2	5.41
1082	1.602	DE	260	240	188	72.31	1.581	UK	259	252	216	83.4
1083	2.889	AT	46	23	15	32.61	1.973	AT	46	29	18	39.13
1084	1.477	IT	65	48	34	52.31	1.618	FR	65	46	31	47.69
1086	1.018	DE	22	5	5	22.73	1.51	DE	22	5	5	22.73
1089	1.409	SE	55	40	24	43.64	1.342	FR	54	45	26	48.15
1101	1.189	FR	44	35	25	56.82	1.209	EL	43	35	23	53.49
1102	1.645	IT	29	16	2	6.9	1.697	IT	29	15	3	10.34
1107	1.751	IT	42	29	7	16.67	1.372	FR	41	29	2	4.88
1200	1.344	DE	22	9	6	27.27	1.342	DE	22	9	6	27.27
1310	1.554	PT	74	64	44	59.46	1.827	IT	74	65	44	59.46
1320	1.084	ES	48	36	31	64.58	1.393	ES	45	35	35	77.78
1392	1.448	DE	94	84	50	53.19	1.391	UK	93	88	66	70.97
1393	1.506	EL	24	14	12	50	1.947	DE	22	15	4	18.18
1394	1.565	ES	45	35	19	42.22	1.318	PT	44	33	18	40.91
1395	1.372	FI	33	27	17	51.52	1.334	DE	32	26	19	59.38
1396	1.879	DE	23	12	7	30.43	1.371	DE	23	13	5	21.74
1399	1.353	IT	21	14	7	33.33	1.511	IT	21	12	6	28.57
1412	1.585	AT	29	13	7	24.14	2.376	PT	28	13	4	14.29
1413	1.144	FI	65	55	51	78.46	1.377	PT	64	58	40	62.5
1414	1.346	FI	48	37	27	56.25	1.126	IT	46	34	27	58.7
1419	1.44	IT	43	34	18	41.86	1.579	ES	39	26	15	38.46
1439	0.983	IT	19	14	12	63.16	1.226	FR	17	11	11	64.71
1511	3.264	PT	13	2	1	7.69	2.686	ES	12	7	1	8.33
1520	1.467	UK	60	50	32	53.33	1.821	FR	58	43	38	65.52
1610	1.337	EL	108	93	57	52.78	1.539	IT	108	89	54	50
1621	-1.987	ES	13	6	0	0	1.497	ES	13	5	0	0
1624	2.503	DE	35	17	8	22.86	1.789	FI	35	19	8	22.86
1629	1.595	FR	31	24	6	19.35	1.87	ES	31	28	11	35.48
1712	1.402	DE	26	17	8	30.77	1.318	DE	26	18	15	57.69
1721	1.363	SE	66	53	28	42.42	1.545	BLX	66	50	21	31.82
1722	1.335	DE	67	58	60	89.55	1.506	SE	67	63	59	88.06
1723	1.36	DE	81	72	49	60.49	1.42	DE	80	75	52	65
1729	1.362	BLX	55	41	13	23.64	1.499	SE	53	41	14	26.42
2011	1.207	FR	35	25	5	14.29	1.523	AT	34	24	3	8.82

Table 59: Bootstrap Test Results for NACE 4-digit Sectors, $\alpha = 5\%$

	1-step GMM Estimation						2-step GMM Estimation					
Sector	Median ω	Median Country	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Country	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
2012	2.215	PT	24	15	8	33.33	1.838	ES	23	14	6	26.09
2013	1.482	DE	60	46	16	26.67	1.224	PT	59	50	18	30.51
2014	1.482	IT	148	120	76	51.35	1.526	FR	146	133	89	60.96
2015	1.323	ES	64	53	29	45.31	1.55	FI	64	54	33	51.56
2016	1.449	ES	114	94	96	84.21	1.473	IT	113	104	98	86.73
2030	1.372	AT	171	157	118	69.01	1.471	SE	170	160	127	74.71
2041	1.569	EL	122	101	80	65.57	1.675	ES	122	107	87	71.31
2052	1.387	DK	26	11	1	3.85	1.778	ES	26	11	1	3.85
2053	1.257	IT	16	9	4	25	1.31	FR	15	9	5	33.33
2059	1.4	DE	178	149	99	55.62	1.631	PT	176	153	97	55.11
2211	1.476	IT	18	6	6	33.33	1.217	DE	18	12	7	38.89
2219	1.237	FR	125	111	90	72	1.3	FR	124	116	89	71.77
2221	1.418	ES	213	203	192	90.14	1.551	AT	213	208	195	91.55
2222	2.192	FI	45	33	10	22.22	1.329	PT	45	37	15	33.33
2223	1.499	BLX	53	41	27	50.94	1.463	BLX	52	41	20	38.46
2229	1.537	AT	49	40	21	42.86	1.589	DE	48	36	24	50
2311	1.272	IT	17	8	6	35.29	1.687	ES	17	8	5	29.41
2312	1.307	SE	55	50	23	41.82	1.748	ES	53	38	19	35.85
2313	2.271	FI	31	18	6	19.35	1.819	FR	30	18	13	43.33
2314	1.468	FI	22	14	5	22.73	2.011	DE	22	16	7	31.82
2319	1.148	UK	23	12	8	34.78	1.352	DE	23	20	11	47.83
2320	1.301	FR	57	47	16	28.07	1.482	SE	57	52	19	33.33
2331	1.525	PT	35	25	20	57.14	1.689	IT	35	20	14	40
2332	-1.977	IT	18	5	0	0	2.416	PT	18	4	0	0
2341	1.583	PT	28	18	12	42.86	3.394	ES	27	16	12	44.44
2351	3.551	ES	25	2	0	0	1.222	ES	25	6	0	0
2352	4.296	BLX	34	11	1	2.94	1.452	BLX	33	16	0	0
2361	1.957	SE	40	18	2	5	2.274	EL	40	25	2	5
2370	1.568	FI	43	25	10	23.26	1.662	FR	42	31	12	28.57
2391	1.304	ES	26	21	13	50	1.303	PT	26	16	9	34.62
2399	1.333	FR	79	67	45	56.96	1.398	UK	79	67	47	59.49
2420	1.164	FI	32	23	19	59.38	1.508	IT	32	22	18	56.25
2431	1.18	DE	15	6	0	0	1.225	IT	15	7	1	6.67
2433	1.297	IT	36	22	9	25	1.603	ES	36	23	10	27.78
2434	1.329	ES	37	23	15	40.54	1.458	ES	37	23	16	43.24
2442	1.518	PT	32	21	1	3.12	1.411	ES	31	18	3	9.68
2443	1.029	IT	23	15	3	13.04	3.025	DE	23	15	6	26.09
2444	1.577	DE	35	27	23	65.71	1.55	DE	34	30	21	61.76
2511	1.412	EL	55	44	17	30.91	1.951	BLX	54	42	12	22.22
2572	1.11	DK	62	53	34	54.84	1.381	SE	62	52	36	58.06
2573	1.386	ES	217	194	121	55.76	1.238	PT	214	207	140	65.42
2592	2.451	ES	17	5	3	17.65	4.019	ES	17	4	3	17.65
2593	1.348	SE	190	171	138	72.63	1.403	AT	185	167	144	77.84
2594	1.511	FR	125	111	86	68.8	1.905	DE	124	111	77	62.1
2599	1.275	DE	160	145	113	70.62	1.415	UK	157	146	117	74.52
2640	1.338	ES	14	6	4	28.57	1.237	IT	14	5	5	35.71
2651	1.271	FI	45	29	19	42.22	1.295	DK	44	30	20	45.45
2660	8.709	DE	10	3	0	0	9.054	DE	10	4	1	10

Table 59: Bootstrap Test Results for NACE 4-digit Sectors, $\alpha = 5\%$

	1-step GMM Estimation						2-step GMM Estimation					
Sector	Median ω	Median Country	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Country	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
2711	1.59	FI	84	73	66	78.57	1.468	FR	81	67	56	69.14
2732	1.155	FI	33	24	19	57.58	1.415	DE	33	24	15	45.45
2740	1.032	UK	12	11	11	91.67	1.409	IT	12	11	9	75
2751	1.28	EL	113	99	88	77.88	1.42	UK	109	104	90	82.57
2752	1.382	UK	36	32	19	52.78	1.233	DE	33	22	15	45.45
2790	1.524	ES	23	15	8	34.78	2.022	ES	22	13	3	13.64
2811	-20.094	IT	9	3	0	0	-3.071	IT	9	3	0	0
2812	1.397	IT	23	18	8	34.78	1.189	IT	22	12	13	59.09
2813	1.064	IT	33	23	17	51.52	1.559	DE	33	21	14	42.42
2814	1.35	FR	79	71	54	68.35	1.474	FR	78	72	57	73.08
2815	1.484	DE	51	34	28	54.9	1.374	PT	51	43	29	56.86
2821	2.903	IT	9	3	0	0	3.18	IT	9	3	0	0
2822	1.281	DE	41	32	15	36.59	1.347	FI	40	28	11	27.5
2824	2.038	IT	6	5	3	50	1.249	IT	6	6	4	66.67
2825	2.481	ES	20	5	4	20	3.664	ES	20	5	4	20
2829	1.239	DE	32	21	11	34.38	1.789	DE	32	19	11	34.38
2830	1.33	DE	134	111	65	48.51	1.281	UK	130	122	61	46.92
2841	1.458	FI	78	73	46	58.97	1.306	DK	75	59	42	56
2849	1.276	ES	35	30	24	68.57	1.286	IT	34	30	23	67.65
2892	1.696	FI	23	15	1	4.35	1.803	FI	22	14	8	36.36
2894	1.217	IT	13	9	5	38.46	1.318	IT	13	9	2	15.38
2899	3.154	DE	9	7	1	11.11	-1.553	DE	9	4	1	11.11
2910	1.71	ES	63	47	22	34.92	1.393	FR	61	49	21	34.43
2920	1.828	PT	32	10	7	21.88	1.563	SE	32	13	7	21.88
2932	1.181	DE	25	17	14	56	1.056	SE	25	17	17	68
3012	2.283	IT	11	3	0	0	1.302	IT	11	4	0	0
3020	1.049	IT	5	3	0	0	-0.481	IT	5	3	0	0
3091	1.455	IT	8	4	2	25	1.506	IT	7	3	3	42.86
3092	0.996	DK	23	14	5	21.74	1.175	DE	23	14	4	17.39
3250	1.217	DE	38	30	11	28.95	1.243	DE	36	29	16	44.44
3291	-2.619	ES	45	37	20	44.44	1.317	PT	45	31	11	24.44
3299	1.939	IT	51	38	24	47.06	1.505	ES	51	40	27	52.94

Note: Each row reports median macro elasticities $\omega$for a NACE 4-digit sector. In addition, median estimates and corresponding countries are displayed.

B.5 Bootstrap Test Results at NACE 2-digit level: Robustness Check 3

Table 60: Bootstrap Test Results for NACE 4-digit Sectors, $\alpha = 5\%$, max. 10 % convergence issues

	1-step GMM Estimation						2-step GMM Estimation					
Sector	Median ω	Median Country	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Country	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
1011	1.382	NL	146	129	66	45.21	1.482	UK	145	138	87	60
1012	1.481	ES	78	62	18	23.08	2.14	UK	77	72	22	28.57
1013	1.573	IT	72	55	12	16.67	1.824	FR	69	58	15	21.74
1020	1.538	UK	37	26	8	21.62	1.581	IT	36	30	14	38.89
1031	1.669	FR	42	32	8	19.05	1.606	FI	42	30	7	16.67
1039	1.44	PT	114	106	65	57.02	1.387	EL	113	108	66	58.41
1041	1.589	FR	126	97	27	21.43	1.596	DK	126	107	25	19.84
1051	1.626	EL	98	85	41	41.84	1.493	UK	98	92	51	52.04
1061	1.626	AT	142	123	41	28.87	2.025	AT	142	122	40	28.17
1062	1.273	SE	62	56	15	24.19	1.52	FR	62	55	15	24.19
1072	1.702	IT	104	85	34	32.69	1.6	FI	103	97	45	43.69
1073	-23.44	FR	19	3	0	0	1.398	FR	18	3	0	0
1081	1.424	SE	39	18	1	2.56	1.67	FI	37	20	0	0
1082	1.602	DE	260	240	131	50.38	1.581	UK	259	252	152	58.69
1083	2.889	AT	46	23	9	19.57	1.973	AT	46	29	12	26.09
1084	1.477	IT	65	48	20	30.77	1.618	FR	65	46	22	33.85
1086	1.018	DE	22	5	2	9.09	1.51	DE	22	5	1	4.55
1089	1.409	SE	55	40	12	21.82	1.342	FR	54	45	14	25.93
1101	1.189	FR	44	35	10	22.73	1.209	EL	43	35	12	27.91
1102	1.645	IT	29	16	2	6.9	1.697	IT	29	15	2	6.9
1107	1.751	IT	42	29	0	0	1.372	FR	41	29	1	2.44
1200	1.344	DE	22	9	5	22.73	1.342	DE	22	9	5	22.73
1310	1.554	PT	74	64	24	32.43	1.827	IT	74	65	24	32.43
1320	1.084	ES	48	36	9	18.75	1.393	ES	45	35	14	31.11
1392	1.448	DE	94	84	26	27.66	1.391	UK	93	88	33	35.48
1393	1.506	EL	24	14	7	29.17	1.947	DE	22	15	4	18.18
1394	1.565	ES	45	35	6	13.33	1.318	PT	44	33	4	9.09
1395	1.372	FI	33	27	8	24.24	1.334	DE	32	26	12	37.5
1396	1.879	DE	23	12	4	17.39	1.371	DE	23	13	3	13.04
1399	1.353	IT	21	14	3	14.29	1.511	IT	21	12	3	14.29
1412	1.585	AT	29	13	3	10.34	2.376	PT	28	13	2	7.14
1413	1.144	FI	65	55	25	38.46	1.377	PT	64	58	22	34.38
1414	1.346	FI	48	37	6	12.5	1.126	IT	46	34	7	15.22
1419	1.44	IT	43	34	7	16.28	1.579	ES	39	26	7	17.95
1439	0.983	IT	19	14	4	21.05	1.226	FR	17	11	3	17.65
1511	3.264	PT	13	2	0	0	2.686	ES	12	7	1	8.33
1520	1.467	UK	60	50	13	21.67	1.821	FR	58	43	19	32.76
1610	1.337	EL	108	93	27	25	1.539	IT	108	89	29	26.85
1621	-1.987	ES	13	6	0	0	1.497	ES	13	5	0	0
1624	2.503	DE	35	17	7	20	1.789	FI	35	19	7	20
1629	1.595	FR	31	24	2	6.45	1.87	ES	31	28	6	19.35
1712	1.402	DE	26	17	2	7.69	1.318	DE	26	18	5	19.23
1721	1.363	SE	66	53	25	37.88	1.545	BLX	66	50	16	24.24
1722	1.335	DE	67	58	39	58.21	1.506	SE	67	63	44	65.67
1723	1.36	DE	81	72	30	37.04	1.42	DE	80	75	31	38.75
1729	1.362	BLX	55	41	10	18.18	1.499	SE	53	41	11	20.75

Table 60: Bootstrap Test Results for NACE 4-digit Sectors, $\alpha = 5\%$, max. 10 % convergence issues

	1-step GMM Estimation						2-step GMM Estimation					
Sector	Median ω	Median Country	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Country	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
2011	1.207	FR	35	25	1	2.86	1.523	AT	34	24	1	2.94
2012	2.215	PT	24	15	7	29.17	1.838	ES	23	14	5	21.74
2013	1.482	DE	60	46	9	15	1.224	PT	59	50	9	15.25
2014	1.482	IT	148	120	30	20.27	1.526	FR	146	133	36	24.66
2015	1.323	ES	64	53	10	15.62	1.55	FI	64	54	8	12.5
2016	1.449	ES	114	94	51	44.74	1.473	IT	113	104	61	53.98
2030	1.372	AT	171	157	79	46.2	1.471	SE	170	160	101	59.41
2041	1.569	EL	122	101	56	45.9	1.675	ES	122	107	61	50
2052	1.387	DK	26	11	0	0	1.778	ES	26	11	0	0
2053	1.257	IT	16	9	1	6.25	1.31	FR	15	9	2	13.33
2059	1.4	DE	178	149	63	35.39	1.631	PT	176	153	53	30.11
2211	1.476	IT	18	6	4	22.22	1.217	DE	18	12	4	22.22
2219	1.237	FR	125	111	67	53.6	1.3	FR	124	116	66	53.23
2221	1.418	ES	213	203	123	57.75	1.551	AT	213	208	147	69.01
2222	2.192	FI	45	33	9	20	1.329	PT	45	37	13	28.89
2223	1.499	BLX	53	41	15	28.3	1.463	BLX	52	41	14	26.92
2229	1.537	AT	49	40	18	36.73	1.589	DE	48	36	20	41.67
2311	1.272	IT	17	8	2	11.76	1.687	ES	17	8	2	11.76
2312	1.307	SE	55	50	15	27.27	1.748	ES	53	38	16	30.19
2313	2.271	FI	31	18	2	6.45	1.819	FR	30	18	7	23.33
2314	1.468	FI	22	14	3	13.64	2.011	DE	22	16	2	9.09
2319	1.148	UK	23	12	7	30.43	1.352	DE	23	20	8	34.78
2320	1.301	FR	57	47	14	24.56	1.482	SE	57	52	13	22.81
2331	1.525	PT	35	25	11	31.43	1.689	IT	35	20	10	28.57
2332	-1.977	IT	18	5	0	0	2.416	PT	18	4	0	0
2341	1.583	PT	28	18	9	32.14	3.394	ES	27	16	10	37.04
2351	3.551	ES	25	2	0	0	1.222	ES	25	6	0	0
2352	4.296	BLX	34	11	1	2.94	1.452	BLX	33	16	0	0
2361	1.957	SE	40	18	1	2.5	2.274	EL	40	25	1	2.5
2370	1.568	FI	43	25	6	13.95	1.662	FR	42	31	8	19.05
2391	1.304	ES	26	21	11	42.31	1.303	PT	26	16	5	19.23
2399	1.333	FR	79	67	30	37.97	1.398	UK	79	67	29	36.71
2420	1.164	FI	32	23	11	34.38	1.508	IT	32	22	11	34.38
2431	1.18	DE	15	6	0	0	1.225	IT	15	7	1	6.67
2433	1.297	IT	36	22	2	5.56	1.603	ES	36	23	3	8.33
2434	1.329	ES	37	23	10	27.03	1.458	ES	37	23	10	27.03
2442	1.518	PT	32	21	0	0	1.411	ES	31	18	0	0
2443	1.029	IT	23	15	1	4.35	3.025	DE	23	15	3	13.04
2444	1.577	DE	35	27	11	31.43	1.55	DE	34	30	14	41.18
2511	1.412	EL	55	44	12	21.82	1.951	BLX	54	42	9	16.67
2572	1.11	DK	62	53	30	48.39	1.381	SE	62	52	26	41.94
2573	1.386	ES	217	194	75	34.56	1.238	PT	214	207	88	41.12
2592	2.451	ES	17	5	0	0	4.019	ES	17	4	0	0
2593	1.348	SE	190	171	76	40	1.403	AT	185	167	78	42.16
2594	1.511	FR	125	111	58	46.4	1.905	DE	124	111	48	38.71
2599	1.275	DE	160	145	74	46.25	1.415	UK	157	146	75	47.77

Table 60: Bootstrap Test Results for NACE 4-digit Sectors, $\alpha = 5\%$, max. 10 % convergence issues

	1-step GMM Estimation						2-step GMM Estimation					
Sector	Median ω	Median Country	N (b)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)	Median ω	Median Country	N (c)	$\omega < \sigma_g$ (1)	Signif. (2)	% (3)
2640	1.338	ES	14	6	1	7.14	1.237	IT	14	5	2	14.29
2651	1.271	FI	45	29	9	20	1.295	DK	44	30	8	18.18
2660	8.709	DE	10	3	0	0	9.054	DE	10	4	0	0
2711	1.59	FI	84	73	37	44.05	1.468	FR	81	67	34	41.98
2732	1.155	FI	33	24	14	42.42	1.415	DE	33	24	10	30.3
2740	1.032	UK	12	11	8	66.67	1.409	IT	12	11	6	50
2751	1.28	EL	113	99	40	35.4	1.42	UK	109	104	39	35.78
2752	1.382	UK	36	32	9	25	1.233	DE	33	22	9	27.27
2790	1.524	ES	23	15	3	13.04	2.022	ES	22	13	1	4.55
2811	-20.094	IT	9	3	0	0	-3.071	IT	9	3	0	0
2812	1.397	IT	23	18	6	26.09	1.189	IT	22	12	8	36.36
2813	1.064	IT	33	23	12	36.36	1.559	DE	33	21	10	30.3
2814	1.35	FR	79	71	42	53.16	1.474	FR	78	72	41	52.56
2815	1.484	DE	51	34	19	37.25	1.374	PT	51	43	21	41.18
2821	2.903	IT	9	3	0	0	3.18	IT	9	3	0	0
2822	1.281	DE	41	32	10	24.39	1.347	FI	40	28	7	17.5
2824	2.038	IT	6	5	1	16.67	1.249	IT	6	6	1	16.67
2825	2.481	ES	20	5	3	15	3.664	ES	20	5	3	15
2829	1.239	DE	32	21	6	18.75	1.789	DE	32	19	4	12.5
2830	1.33	DE	134	111	28	20.9	1.281	UK	130	122	25	19.23
2841	1.458	FI	78	73	25	32.05	1.306	DK	75	59	16	21.33
2849	1.276	ES	35	30	16	45.71	1.286	IT	34	30	14	41.18
2892	1.696	FI	23	15	1	4.35	1.803	FI	22	14	4	18.18
2894	1.217	IT	13	9	1	7.69	1.318	IT	13	9	0	0
2899	3.154	DE	9	7	0	0	-1.553	DE	9	4	0	0
2910	1.71	ES	63	47	8	12.7	1.393	FR	61	49	9	14.75
2920	1.828	PT	32	10	6	18.75	1.563	SE	32	13	6	18.75
2932	1.181	DE	25	17	10	40	1.056	SE	25	17	13	52
3012	2.283	IT	11	3	0	0	1.302	IT	11	4	0	0
3020	1.049	IT	5	3	0	0	-0.481	IT	5	3	0	0
3091	1.455	IT	8	4	2	25	1.506	IT	7	3	1	14.29
3092	0.996	DK	23	14	5	21.74	1.175	DE	23	14	4	17.39
3250	1.217	DE	38	30	5	13.16	1.243	DE	36	29	5	13.89
3291	-2.619	ES	45	37	15	33.33	1.317	PT	45	31	8	17.78
3299	1.939	IT	51	38	15	29.41	1.505	ES	51	40	13	25.49

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Notes:

References

Armington, Paul S. (1969). "A Theory of Demand for Products Distinguished by Place of Production". In: *Staff Papers - International Monetary Fund* 16.1, pages. URL: `http://www.jstor.org/stable/3866403`.

Balistreri, Edward J., Ayed Al-Qahtani, and Carol A. Dahl (2010). "Oil and Petroleum Product Armington Elasticities: A New-Geography-of-Trade Approach to Estimation". In: *The Energy Journal* 31 (3), pp. 415–420. URL: http://www.iaee.org/en/publications/ejarticle.aspx?id=2392.

Beveren, Ilke Van, Andrew B. Bernard, and Hylke Vandenbussche (2012). *Concording EU Trade and Production Data over Time*. Working Paper 18604. National Bureau of Economic Research. URL: http://www.nber.org/papers/w18604.

Broda, Christian and David E. Weinstein (2006). "Globalization and the Gains from Variety". In: *The Quarterly Journal of Economics* 121.2, pp. 541–585.

Chaney, Thomas (2008). "Distorted Gravity: The Intensive and Extensive Margins of International Trade". In: *American Economic Review* 98.4, pp. 1707–21. URL: http://www.aeaweb.org/articles.php?doi=10.1257/aer.98.4.1707.

Commission, European (2005). *Statistics on the trading of goods. user guide ; 2005 edition*. URL: http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-BM-05-001-EN.pdf (visited on 07/30/2015).

Davidson, Russell and James G. MacKinnon (2004). *Econometric theory and methods*. Vol. 5. Oxford University Press New York.

Del Gatto, Massimo, Giordano Mion, and Gianmarco I. P. Ottaviano (2006). *Trade Integration, Firm Selection and the Costs of Non-Europe*. CEPR Discussion Papers 5730. C.E.P.R. Discussion Papers.

Elzhov, Timur V., Katharine M. Mullen, Andrej-Nikolai Spiess, and Ben Bolker (2013). *minpack.lm: R interface to the Levenberg-Marquardt nonlinear least-squares algorithm found in MINPACK, plus support for bounds*. R package version 1.1-8. URL: http://CRAN.R-project.org/package=minpack.lm.

Enders, Walter and Stan Hurn (2007). "Identifying aggregate demand and supply shocks in a small open economy". In: *Oxford Economic Papers* 59.3, pp. 411–429. eprint: http://oep.oxfordjournals.org/content/59/3/411.full.pdf+html. URL: http://oep.oxfordjournals.org/content/59/3/411.abstract.

Eurostat, the statistical office of the European Union (2008). *Europroms. PRODCOM Data*. URL: http://ec.europa.eu/eurostat/documents/120432/4433294/europroms-user-guide.pdf/e2a31644-e6a2-4357-8f78-5fa1d7a09556 (visited on 07/30/2015).

— (2013). *Quality Report on PRODCOM. 2012 annual data*. URL: http://ec.europa.eu/eurostat/cache/metadata/Annexes/prom_esms_an1.pdf (visited on 07/30/2015).

— (2014). *Statistics on the production of manufactured goods. Reference Metadata in Euro SDMX Metadata Structure (ESMS)*. URL: http://ec.europa.eu/eurostat/cache/metadata/de/prom_esms.htm#stat_pres1410183512347%5C (visited on 07/30/2015).

— (2015). *International Trade. Reference Metadata in Euro SDMX Metadata Structure (ESMS)*. URL: http://ec.europa.eu/eurostat/cache/metadata/DE/%09%09ei_et_esms.htm#stat_process1422021569382 (visited on 07/30/2015).

Feenstra, Robert C. (1991). *New Goods and Index Numbers: U.S. Import Prices*. Working Paper 3610. National Bureau of Economic Research. DOI: 10.3386/w3610. URL: http://www.nber.org/papers/w3610.

— (1994). "New Product Varieties and the Measurement of International Prices". In: *American Economic Review* 84.1, pp. 157–77.

Feenstra, Robert C., Philip Luck, Maurice Obstfeld, and Katheryn N. Russ (2014). *In Search of the Armington Elasticity*. Working Paper 20063. National Bureau of Economic Research. URL: http://www.nber.org/papers/w20063.

Feenstra, Robert C. and John Romalis (2012). *International Prices and Endogenous Quality*. Working Paper 18314. National Bureau of Economic Research. URL: http://www.nber.org/papers/w18314.

Gomes, Sandra, Pascal Jacquinot, and Massimiliano Pisani (2014). *Fiscal devaluation in the euro area: a model-based analysis*. Working Paper Series 1725. European Central Bank. URL: http://ideas.repec.org/p/ecb/ecbwps/20141725.html.

Hansen, Lars Peter (1982). "Large Sample Properties of Generalized Method of Moments Estimators". In: *Econometrica* 50.4, pages. URL: http://www.jstor.org/stable/1912775.

Huchet-Bourdon, Marilyne and Esmaeil Pishbahar (2009). "Armington Elasticities and Tariff Regime: An Application to European Union Rice Imports". In: *Journal of Agricultural Economics* 60.3, pp. 586–603. URL: http://dx.doi.org/10.1111/j.1477-9552.2009.00217.x.

Imbs, Jean and Isabelle Mejean (2010). *Trade Elasticities: A Final Report for the European Commission*. European Economy - Economic Papers 432. Directorate General Economic and Monetary Affairs (DG ECFIN), European Commission. URL: http://ideas.repec.org/p/euf/ecopap/0432.html.

— (2013). *Elasticity Optimism*. Manuscript. URL: http://isabellemejean.com/imbs_mejean_sept2013.pdf.

Jovanovic, Branimir (2013). *Aggregation Bias in Trade Elasticities: The Case of Macedonia*. FIW Working Paper series 106. FIW. URL: http://ideas.repec.org/p/wsr/wpaper/y2013i106.html.

Krugman, Paul (1980). "Scale Economies, Product Differentiation, and the Pattern of Trade". In: *American Economic Review* 70.5, pp. 950–59.

Lundmark, Robert and Shima Shahrammehr (2011). "Forest biomass and Armington elasticities in Europe". In: *Biomass and Bioenergy* 35.1, pp. 415–420. URL: http://www.sciencedirect.com/science/article/pii/S0961953410003077.

MacDaniel, Christine A. (2003). "A review of Armington trade substitution elasticities". In: *International economics : the quarterly journal in international economics founded in 1980 by the CEPII.*

MacKinnon, James G. (2006). "Bootstrap Methods in Econometrics*". In: *Economic Record* 82, S2–S18. ISSN: 1475-4932. URL: http://dx.doi.org/10.1111/j.1475-4932.2006.00328.x.

Melitz (2003). "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity". In: *Econometrica* 71.6, pp. 1695–1725. URL: http://ideas.repec.org/a/ecm/emetrp/v71y2003i6p1695-1725.html.

Melitz and Gianmarco I. P. Ottaviano (2008). "Market Size, Trade, and Productivity". In: *The Review of Economic Studies* 75.1, pp. 295–316. eprint: http://restud.oxfordjournals.org/content/75/1/295.full.pdf+html. URL: http://restud.oxfordjournals.org/content/75/1/295.abstract.

Mohler, Lukas and Michael Seitz (2012). “The gains from variety in the European Union”. In: *Review of World Economics* 148.3, pp. 475–500. URL: http://dx.doi.org/10.1007/s10290-012-0126-1.

Moré, Jorge J. (1978). “The Levenberg-Marquardt algorithm: Implementation and theory”. In: *Numerical Analysis*. Ed. by G.A. Watson. Vol. 630. Lecture Notes in Mathematics. Springer Berlin Heidelberg, pp. 105–116. ISBN: 978-3-540-08538-6. URL: http://dx.doi.org/10.1007/BFb0067700.

Pierce, Justin R. and Peter K. Schott (2009). *A Concordance Between Ten-Digit U.S. Harmonized System Codes and SIC/NAICS Product Classes and Industries*. NBER Working Papers 15548. National Bureau of Economic Research, Inc. URL: http://ideas.repec.org/p/nbr/nberwo/15548.html.

Rigobon, Roberto (2003). “Identification through Heteroskedasticity”. In: *The Review of Economics and Statistics* 85.4, pages. URL: http://www.jstor.org/stable/3211805.

Saito, Mika (2004). “Armington elasticities in intermediate inputs trade: a problem in using multilateral trade data”. In: *Canadian Journal of Economics* 37.4, pp. 1097–1117. URL: http://EconPapers.repec.org/RePEc:cje:issued:v:37:y:2004:i:4:p:1097-1117.

Samuelson, Paul A. (1952). “The Transfer Problem and Transport Costs: The Terms of Trade When Impediments are Absent”. In: *The Economic Journal* 62.246, pages. URL: http://www.jstor.org/stable/2227005.

Sato, Kazuo (1976). “THE IDEAL LOG-CHANGE INDEX NUMBER.” In: *Review of Economics and Statistics* 58.2, p. 223. URL: http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=4646175&site=ehost-live.

Soderbery, Anson (2009). *Investigating the asymptotic properties of elasticity of substitution estimates: A Monte Carlo Simulation of Feenstra (1994)*. Working Paper. National Bureau of Economic Research.

— (2010). “Investigating the asymptotic properties of import elasticity estimates”. In: *Economics Letters* 109.2, pp. 57–62. ISSN: 0165-1765. DOI: http://dx.doi.org/10.1016/j.econlet.2010.08.006. URL: http://www.sciencedirect.com/science/article/pii/S0165176510002703.

Vartia, Yrjö (1976). “Ideal Log-Change Index Numbers”. In: *Scandinavian Journal of Statistics* 3.3, pages. URL: http://www.jstor.org/stable/4615624.