ERASMUS UNIVERSITY ROTTERDAM

Dutch trade and welfare implications of tariff reform

A General Equilibrium Analysis

Rowan Winkels
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We study the role of import tariffs on the trade flows and welfare levels of the Netherlands, surrounded by eight of its biggest trading partners. We extend the general equilibrium Heckscher-Ohlin model and run various numerical simulations. With the Netherlands modeled as a relatively capital abundant country, our cases see Dutch trade flows commonly divert according to Heckscher-Ohlin theorems. Complete elimination of Dutch import tariffs shows welfare and net exports to increase by 0.56% and 54.98% respectively. Prices converge as trade intensifies in all cases. Factor price equalization does not completely materialize as insufficient implicit factor trade takes place.

Contents

1. Introduction and relevant literature

Free trade is, without a doubt, one of the most debated topics in modern economics. Throughout history, economic protectionism and political incentives have caused many countries from all around the world to impose trade barriers. More specific, Irwin (2012) attributes the imposition of higher import tariffs to the Great Depression of the 1930s. Thereafter, countries started to rethink their international trading positions and the inherent effects of trade barriers. Increasingly, groups of countries have created reduced tariff trade environments through multilateral trade agreements. It wasn't until 1968 that the European Union (EU) managed to create its tariff free internal market.

Today, the United States of America and the European Union are in advanced talks concerning the so-called Transatlantic Trade and Investment Partnership (TTIP). This comprehensive multilateral trade and investment agreement is meant to further integrate EU and US markets. Supporters of TTIP are enthusiastic about the economic growth that free trade will bring between the two trading blocs. European critics of the agreement fear that strict regulations in the EU, especially concerning the food industry, will be relaxed in order to compete with lower US standards. Although similar fears were expressed concerning the EU's internal market, no widespread deregulation has occurred since.

International trade agreements and the EU's internal market seem to have greatly benefitted the Netherlands, one of its founding countries. The graphs in figure 1 display an indisputable increase in Dutch production output, wealth and international trade from 1968 until now. Although it would be too blunt to attribute all this growth to the absence of import tariffs, economic theory does support the assumption that free trade benefits welfare. Nevertheless, the comprehensive effects of import tariff reductions remain unknown.

In this paper, we aim to determine the effects of tariff reform on Dutch production output, national welfare and trade levels. In an extended Heckscher-Ohlin (H-O) setting, we formulate a large scale general equilibrium model which centers on the Dutch economy. Through various simulations, we are able to ascertain the effects of both

unilateral and multilateral tariff drops. Additionally, a so-called 'Nexit' is simulated, where the

Netherlands steps out of the European Union. The resulting simulated levels of production and directions of trade are found to mostly follow the theorems embodied in the H-O model. In general, we find the Dutch economy obtains higher levels of national welfare as import tariffs are dropped.

In the remainder of this section we highlight the H-O model and its inherent assumptions regarding import tariffs. We also look at former attempts of quantifying trade liberation. In section 2, we discuss the Dutch input-output table and our theoretical base for the equilibrium model. The model is extended and a benchmark simulation is run in section 3, allowing us to test its predictive strength. Our other simulation cases are also introduced. In section 4 we report the main results obtained from our various simulations. In section 5 we further analyze these results and discuss apparent limitations of our model. Section 6 provides a brief summary and conclusion of the paper.

Dutch production output, welfare and trade.[1]   Figure 1
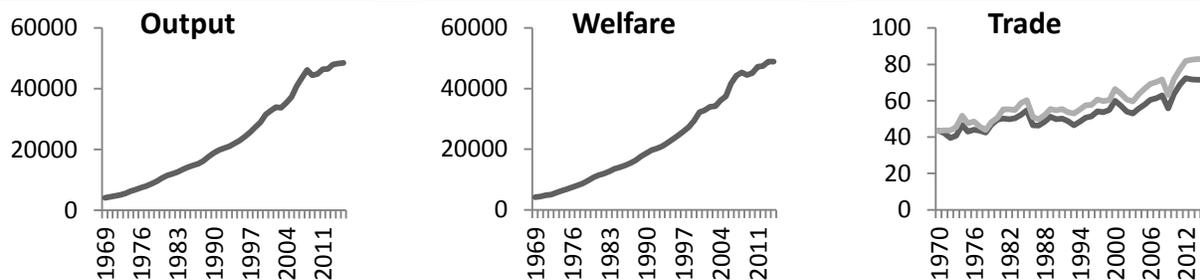
1.1. The Heckscher-Ohlin model

The theoretical essence of international trade is logically captured by David Ricardo's (1817) theory of comparative advantage. This theory explains why countries engage in international trade. It shows that gains from trade, i.e. national welfare, can be increased when countries concentrate all available resources on the production of one

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particular good. Nevertheless, this good must be produced at lower relative marginal costs compared to other countries prior to trade.

Eli Heckscher and Bertil Ohlin (1933) built their H-O model based on Ricardo's theory, seeking to build a general equilibrium model which predicts trade flows. This basic model is set up to assume that just two countries contain two factors of production (labor and capital), which are subsequently used to produce one of two traded goods. Several theorems have been draw from this "2x2x2 model". Foremost, the Heckscher-Ohlin theorem states that countries will always export products that use their relatively abundant factor of production and import products that use the country's relatively scarce factors. Two other well-known results from the model are portrayed through the Stolper-Samuelson theorem (1941) and the Rybczynski theorem (1955). The Stolper-Samuelson theorem explains how the increased relative price of a certain good will cause the relative reward of its main input factor to increase as well. This applies specifically to real wages and real returns to capital. The Rybczynski theorem states that a rise in the endowment of one factor, will always lead to an even greater rise of production of the good that uses that factor intensively. Lastly, factor price equalization can be observed within the H-O setting. As countries open up to free and competitive trade, factor prices are determined to converge along with traded goods prices. This convergence of factor prices can be attributed to the implicit trade of factors through goods; one might say a good is no more than a bundle of input factors. Leamer (1995), states that international trade of goods is therefore indirect factor arbitrage, transferring the services of otherwise immobile factors of production from locations where these factors are relatively abundant to locations where they are relatively scarce.

In empirical terms, the Heckscher-Ohlin model and its theorems have performed precariously. Probably the most famous econometric research into the Heckscher-Ohlin model comes from Leontief (1953). He set out to empirically test, and eventually contradicts, the H-O theorem. Using U.S. trade data, he found that the majority of exports were labor-intensive, despite the U.S. being the most capital abundant country in the world at the time. More empirical criticism comes from Bowen et al. (1986), who set up a multicountry, multicommodity, multifactor world in which they use separately

measured values for trade, factor input requirements and factor endowments. Hereby, the Rybczynski theorem is challenged when the relationship between trade in goods and the interaction between factor inputs and factor endowments is analyzed. On the other hand, we also find more positive empirics. It is Bergstrand (1990) who emphasizes that the discrepancy between theoretical and statistical results lies within the restrictive set of assumptions that is attributed to the H-O model. His research into the Heckscher-Ohlin model generally confirms the theoretical propositions, though unfortunately without convincing statistical significance. Chen (1992) allows for a more forgiving H-O model when researching long-run equilibria. He finds that H-O values are supported, as the differences in factor endowment ratios play a significant role in establishing long-run trade values. When researching the linkages between U.S. wages and inequality, Leamer (1996) finds that the Stolper-Samuelson theorem holds in three of four cases, when using a specialized version of the general H-O model. Moreover, it seems that the general conclusion of econometric researchers is that the H-O model will only perform alongside statistical results in two ways. Either the experiments are constrained to the initially proposed 2x2x2 setting, or the assumptions and properties of the H-O model are to be relaxed.

1.2. Implied effects of import tariffs

Intuitively, one might reason that the initial implementation of a tariff will always yield an all-round negative economic effect upon a country. For example, a tariff will raise the price of certain imported goods, causing the demand for these goods to drop. It is then generally a matter of time before trading partners retaliate with their own tariffs, hence breaking down the free trade environment. Assuming that governments cannot endlessly reinvest the tariff revenue, earning profits along the way, we will see that the tariff implementation inevitably leads to a decrease in a country's welfare as a result of diminished trade. Nevertheless, through the Stolper-Samuelson theorem, we find differing effects following tariff implementation. That is, as a tariff is placed on the import of a labor-intensive good, we should see an increase in demand for the domestic production of that same good. Logically, the excess demand for this labor-intensive good will cause the domestic price to rise, relative to that of the capital-intensive good.

In this context, workers will suffer less from implemented tariffs on labor-intensive goods, whereas capital owners will suffer less from implemented tariffs on capital-intensive

goods. Though these effects seem marginal, they may have created major political incentives for governments to implement certain import tariffs in the past.

In order to analyze the welfare effects of import tariffs within an H-O setting, we must distinguish between different types of tariff reform. In modern economics, we find instances of both unilateral and multilateral tariff drops. In the case of a unilateral tariff drop, a country can choose to individually drop its import tariffs, thus independently liberalizing its trade inflows. This became a popular measure amongst developing countries in the late 1980's. Sally (2008) states that compelling economic and political arguments call for unilateral liberalization. He stresses that welfare gains result directly from import liberalization, which replaces comparatively costly domestic production and reallocates resources more efficiently. Using a general equilibrium method, Baldwin (2010) also finds countries' motives for these tariff reforms to be both economically and politically driven. We observe multilateral tariff drops when a group of countries decide to either regulate international trade or form an economic trading block. The General Agreement on Tariffs and Trade (GATT), which was signed during the United Nations conference on trade and employment in 1947, originally saw 23 nations commit to worldwide international trade regulation. Following several rounds of GATT negotiations, Bown and Irwin (2015) estimate the average tariff levels for the major participants to have dropped from an initial 22% to a mere 5% today. A more drastic multilateral tariff drop is to be found within the European Union, where intra-EU tariffs have been completely eliminated since 1968. Though enticing, a causal link between the abolishment of internal tariffs and the growth of EU welfare may not yet be made.

1.3. Quantifying trade reform

In order to estimate the effects that certain trade liberalizations may have, various researchers have used numerical general equilibrium models to do so. Melo and Tarr (1990) research the welfare effects and resource shifts that removal of U.S. quantitative

restrictions in textiles, steel and autos might entail. Using a static general equilibrium model with constant returns to scale (CRTS) and intermediate goods, average welfare gains of around 3% are estimated as a result of dropping tariff protection. Francois et al (1994) quantify the effects of the 8th round of GATT talks, better known as the Uruguay round. In a static general equilibrium model with dynamic link, they find that trade and income increase undoubtedly. Nevertheless, the estimated expansions do depend on how the model is specified. Assuming CRTS and perfect competition (PC), a rise in exports of 8.7% is measured. Whereas the model with monopolistic competition (MC) and increasing returns to scale (IRTS) measures a rise in exports of 23.5%. Counterfactual income is shown to increase with $65 billion in the CRTS and PC setting to $181 billion in the IRTS and MC setting. Harrison, Rutherford and Tarr (1997) run dynamic simulations on the Uruguay round, concluding that welfare gains vary from $96 billion per year in the short run, to $171 billion per year in the long run. Unlike earlier work, they find that developing countries do not all benefit from the trade agreement in the short run. Nonetheless, everyone benefits on the long run as developing countries are able to gain through their own unilateral liberalization. Finally, Rutherford and Tarr (2002) formulate a two-sector economy in which they recognize that additional intermediate input varieties are crucial in obtaining welfare gains from trade liberalization. Combining both IRTS and imperfect competition with CRTS and perfect competition in their model, they find a 10% tariff cut to lead to a 10.6% estimated gain in welfare.

2. Theoretical framework

We are looking to build a model which will accurately replicate the behavior of the Dutch economy and its trading counterparts. Assuming CRTS and PC, we use the country's input-output table to display information with respect to the performance and mechanisms of the economy. It shows the amount of labor and capital that representative households put into the economy, as well as the amount of welfare that is taken out in the form of consumption. In table 8.2.1 we find the real Dutch input-output matrix for the year 2010. Positive entries represent output in a particular market, whereas negative entries in the same column represent this market's inputs. A balanced

equilibrium is represented by an input-output table of which the row and column sums are zero. In this case the row sums are not zero, meaning we have imports and exports flowing into and out of the country. We do see balanced columns, meaning the value of all inputs equals the value of the output.

2.1. General equilibrium analysis

With multiple endogenous variables and many interacting markets, we cannot model the economy as a singular optimization problem. The presence of multiple countries and traded goods calls for a more sophisticated system of equations, displaying nation-wide consumption preferences and production capabilities. In order to run various trade simulations on the Dutch economy, we set out to build an extended version of the classic Heckscher-Ohlin model. This model allows us to analyze how underlying technologies and factor endowments will affect the direction of international trade. Even better, it allows us to measure the effects of tariff drops on the level of national welfare.

First we must establish the basic characteristics and micro-economic features of the unaltered H-O model, which represents the economy as a whole through a square system of equations. We formulate the outlines of the model as such: Multiple good-producing countries, each containing one representative household, are included in the model. Household consumption is based on optimization of its respective Cobb-Douglas utility function. Country production is based on optimization of its respective Cobb-Douglas production function, portraying constant returns to scale. Household and country interactions are foremost mediated by complete markets and prices, where perfect competition is assumed. Equilibrium occurs when endogenous variables adjust such that households, subject to their preferences and constraints, cannot do any better by altering their behavior and supply equals demand in each market.

As the H-O model has no trade barriers in place, the assumption of perfect competition sees consumers in both countries pay the same price for their respective goods. Finally, full factor mobility within countries is assumed conceivable and costless, hereby the unemployment rate is assumed to be zero. Henceforth, international factor mobility between countries is not assumed necessary nor assumed possible. The final general

equilibrium for a country is characterized by the equilibrium amounts produced, alongside equilibrium goods and factor prices.

2.2. Establishing micro-economic foundations

For our basic model to stand firm, we derive equations for profit maximizing firms and utility maximizing households. Emami Namini (2015) sets the structure of the general equilibrium by formulating market conditions, which combine the derived equations and final equilibrium values.

2.2.1. Modeling firm behavior

Each firm in the Heckscher-Ohlin setting is modeled by a Cobb-Douglass production function and linear cost functions. Q_0, L_0 and K_0 represent the production of the firm which produces good 0, the amount of labor required to produce good 0 and the amount of capital required to produce good 0 respectively. The value of parameter α determines the production share of input factors, in this example labor and capital. $\bar{C}$, w and r represent total cost, wage and capital rent respectively:

$$Q_0 = L_0^\alpha K_0^{1-\alpha} \qquad \text{(Equation 2.1)}$$

$$\bar{C} = wL_0 + rK_0 \qquad \text{(Equation 2.2)}$$

We are interested in finding the labor and capital demand, under profit maximizing conditions. Hence, we set up a Lagrangian function (Λ) in which production costs are minimized under the constraint that total production will never exceed the demand for good 0. λ represents the Lagrange multiplier:

$$\Lambda = wL_0 + rK_0 + \lambda(Q_0 - L_0^\alpha K_0^{1-\alpha}) \qquad \text{(Equation 2.3)}$$

As we partially derive this equation, we effectively maximize profits by minimizing costs. Next, the necessary first order conditions for a minimum of production costs are set:

$$\frac{\delta \Lambda}{\delta L_0} = w - \lambda\alpha\left(\frac{K_0}{L_0}\right)^{1-\alpha} = 0 \qquad \text{(Equation 2.4)}$$

$$\frac{\delta\Lambda}{\delta K_0} = r - \lambda(1-\alpha)\left(\frac{L_0}{K_0}\right)^\alpha = 0 \qquad \text{(Equation 2.5)}$$

By substituting equation (2.4) into equation (2.5), we derive a value for K_0, in terms of L_0:

$$\frac{w}{r} = \left(\frac{\alpha}{1-\alpha}\right)\left(\frac{K_0^{1-\alpha}L_0^{\alpha-1}}{L_0^\alpha K_0^{1-\alpha}}\right) \qquad \text{(Equation 2.6)}$$

$$\frac{w}{r} = \left(\frac{\alpha}{1-\alpha}\right)\left(\frac{K_0}{L_0}\right) \qquad \text{(Equation 2.7)}$$

$$K_0 = L_0\left(\frac{w}{r}\right)\left(\frac{1-\alpha}{\alpha}\right) \qquad \text{(Equation 2.8)}$$

Next, inserting equation (2.8) into our production function (2.1) allows us to express total production in terms of L_0:

$$Q_0 = L_0^\alpha K_0^{1-\alpha} = L_0^\alpha\left((\frac{w}{r})(\frac{1-\alpha}{\alpha})L_0\right)^{1-\alpha} \qquad \text{(Equation 2.9)}$$

$$Q_0 = L_0^\alpha\left((\frac{w}{r})(\frac{1-\alpha}{\alpha})\right)^{1-\alpha} L_0^{1-\alpha} \qquad \text{(Equation 2.10)}$$

$$Q_0 = L_0\left((\frac{w}{r})(\frac{1-\alpha}{\alpha})\right)^{1-\alpha} \qquad \text{(Equation 2.11)}$$

Next, we can rewrite L_0 in terms of Q_0:

$$L_0 = Q_0\left(\frac{r}{w}\cdot\frac{\alpha}{1-\alpha}\right)^{1-\alpha} \qquad \text{(Equation 2.12)}$$

By substituting equation (2.12) into equation (2.8), we also get K_0 terms of Q_0:

$$K_0 = Q_0\left(\frac{r}{w}\cdot\frac{\alpha}{1-\alpha}\right)^{1-\alpha}(\frac{w}{r})(\frac{1-\alpha}{\alpha}) \qquad \text{(Equation 2.13)}$$

$$K_0 = Q_0\left(\frac{w}{r}\cdot\frac{1-\alpha}{\alpha}\right)^\alpha \qquad \text{(Equation 2.14)}$$

We can now derive the factor input coefficients. From equation (2.12) we can derive the labor demand per unit output and from equation (2.14) we can derive the capital demand per unit output:

$$a_{L0} = \left(\frac{r}{w} \cdot \frac{\alpha}{1-\alpha}\right)^{1-\alpha} \qquad \text{(Equation 2.15)}$$

$$a_{K0} = \left(\frac{w}{r} \cdot \frac{1-\alpha}{\alpha}\right)^{\alpha} \qquad \text{(Equation 2.16)}$$

Apart from deriving factor input coefficients, equation (2.12) and equation (2.14) also allow us to establish the level of total costs. MC_0 and p_0 represent the marginal costs and the price of good 0 respectively:

$$\bar{C} = wL_0 + rK_0 \qquad \text{(Equation 2.17)}$$

$$\bar{C} = wQ_0 \left(\frac{r}{w} \cdot \frac{\alpha}{1-\alpha}\right)^{1-\alpha} + rQ_0 \left(\frac{w}{r} \cdot \frac{1-\alpha}{\alpha}\right)^{\alpha} \qquad \text{(Equation 2.18)}$$

$$\bar{C} = Q_0 r^{1-\alpha} w^{\alpha} \frac{1}{\alpha^{\alpha}(1-\alpha)^{(1-\alpha)}} \qquad \text{(Equation 2.19)}$$

$$\frac{\bar{C}}{Q_0} = MC_0 = p_0 = w^{\alpha} r^{1-\alpha} \frac{1}{\alpha^{\alpha}(1-\alpha)^{(1-\alpha)}} \qquad \text{(Equation 2.20)}$$

With perfect competition driving all prices to unity and firms realizing zero profits, minimum average costs will equal marginal costs. Hence, equation (2.20) gives us the marginal costs in terms of wages, rent and a residual scaling factor. In our model, we represent firms by their respective MC functions, for these functions inherently display optimal behavior of firms.

2.2.2. Modeling household behavior

Parallel to our firms, each household in the Heckscher-Ohlin setting is modeled by a Cobb-Douglas utility function and linear cost functions. $\bar{U}$, C_0 and C_1 represent the utility of a household which consumes good 0 and good 1, the amount of good 0 consumed and the amount of good 1 consumed respectively. The value of parameter ϕ determines

whether utility gains rely more on consumption of either good 0 or good 1. C_U, p_0 and p_1 represent consumption costs, the price of good 0 and the price of good 1 respectively:

$$\bar{U} = C_0^\phi C_1^{1-\phi} \qquad \text{(Equation 2.21)}$$

$$C_U = p_0 C_0 + p_1 C_1 \qquad \text{(Equation 2.22)}$$

In this instance, we are looking to find utility maximizing levels of consumption. Once more, we start off with a Lagrangian function. Total consumption expenditure is projected under the constraint such that the household will minimize its consumption, whilst reaching given utility level $\bar{U}$:

$$\Lambda = p_0 C_0 + p_1 C_1 + \lambda(\bar{U} - C_0^\phi C_1^{1-\phi}) \qquad \text{(Equation 2.23)}$$

We set the necessary first order conditions for a minimum of spending on consumption:

$$\frac{\delta\Lambda}{\delta C_0} = p_0 - \lambda\phi\left(\frac{C_1}{C_0}\right)^{1-\phi} = 0 \qquad \text{(Equation 2.24)}$$

$$\frac{\delta\Lambda}{\delta C_1} = p_1 - \lambda(1-\phi)\left(\frac{C_0}{C_1}\right)^{\phi} = 0 \qquad \text{(Equation 2.25)}$$

After rewriting equation (2.24) and equation (2.25) to represent both p_0 and p_1 in terms of C_0 and C_1, we divide both equations through one and other in order to find C_1 in terms of C_0 :

$$\frac{p_0}{p_1} = \frac{\phi}{1-\phi} \cdot \frac{C_1^{1-\phi} C_0^{\phi-1}}{C_0^\phi C_1^{1-\phi}} = \frac{\phi}{1-\phi} \cdot \frac{C_1}{C_0} \qquad \text{(Equation 2.26)}$$

$$C_1 = \frac{p_0}{p_1} \cdot \frac{1-\phi}{\phi} \cdot C_0 \qquad \text{(Equation 2.27)}$$

Inserting equation (2.27) into our Cobb-Douglas consumption function (2.21) allows us to determine final levels of C_0 and C_1:

$$\bar{U} = C_0 \left(\frac{p_0}{p_1} \cdot \frac{1-\phi}{\phi} \cdot C_0\right)^{1-\phi} \qquad \text{(Equation 2.28)}$$

$$\bar{U} = C_0 \left(\frac{p_0}{p_1} \cdot \frac{1-\phi}{\phi} \right)^{1-\phi} \qquad \text{(Equation 2.29)}$$

$$C_0 = \bar{U} \left(\frac{p_1}{p_0} \cdot \frac{\phi}{1-\phi} \right)^{1-\phi} \qquad \text{(Equation 2.30)}$$

Similarly, we find:

$$C_1 = \bar{U} \left(\frac{p_0}{p_1} \cdot \frac{1-\phi}{\phi} \right)^{\phi} \qquad \text{(Equation 2.31)}$$

By substituting equation (2.30) and equation (2.31) into our linear cost function (2.22), we can calculate the total cost of purchasing utility:

$$C_U = p_0 \bar{U} \left(\frac{p_1}{p_0} \cdot \frac{\phi}{1-\phi} \right)^{1-\phi} + p_1 \bar{U} \left(\frac{p_0}{p_1} \cdot \frac{1-\phi}{\phi} \right)^{\phi} \qquad \text{(Equation 2.32)}$$

$$C_U = \bar{U} p_0^{\phi} p_1^{1-\phi} \frac{1}{\phi^{\phi}(1-\phi)^{1-\phi}} \qquad \text{(Equation 2.33)}$$

The marginal costs per unit utility are therefore given by:

$$\frac{C_U}{\bar{U}} = e = p_0^{\phi} p_1^{1-\phi} \frac{1}{\phi^{\phi}(1-\phi)^{1-\phi}} \qquad \text{(Equation 2.34)}$$

Lastly, we rename the expenditure function to be e. It represents the costs of purchasing one unit of utility, given optimizing behavior of households. The household uses all his factor income (I) to buy utility:

$$\bar{U} = \frac{I}{e} \qquad \text{(Equation 2.35)}$$

2.3. Formal structure

The formal structure of the basic H-O model can be presented by formulating equilibrium conditions regarding the goods market, the factor market and firm profits. Before we do so, we reposition the residual scaling factors from our marginal cost

function and expenditure function. This way, we also simplify these functions along with the resulting factor input coefficients.

2.3.1. Algebraic simplification

By moving the scaling factors from equation (2.20) and equation (2.34) directly into the firm's and household's respective production and utility functions. Equation (2.1) and equation (2.21) now become:

$$Q_0 = L_0^\alpha K_0^{1-\alpha} \cdot \frac{1}{\alpha^\alpha (1-\alpha)^{(1-\alpha)}} \qquad \text{(Equation 2.36)}$$

$$\bar{U} = C_0^\phi C_1^{1-\phi} \cdot \frac{1}{\phi^\phi (1-\phi)^{1-\phi}} \qquad \text{(Equation 2.37)}$$

The resulting marginal cost functions are now shortened. The value of parameter β determines whether the production of good 1 relies more on labor input or more on capital input:

$$\frac{\bar{C}}{Q_0} = MC_0 = w^\alpha r^{1-\alpha} \qquad \text{(Equation 2.38)}$$

$$\frac{\bar{C}}{Q_1} = MC_1 = w^\beta r^{1-\beta} \qquad \text{(Equation 2.39)}$$

Resulting factor input coefficients take a slightly altered form:

$$\frac{L_0}{Q_0} = a_{L0} = \alpha \cdot \left(\frac{r}{w}\right)^{1-\alpha} \qquad \text{(Equation 2.40)}$$

$$\frac{K_0}{Q_0} = a_{K0} = (1-\alpha) \left(\frac{w}{r}\right)^\alpha \qquad \text{(Equation 2.41)}$$

Complete similarity exists for good 1, which is also produced with a Cobb-Douglas production function:

$$\frac{L_1}{Q_1} = a_{L1} = \beta \cdot \left(\frac{r}{w}\right)^{1-\beta} \qquad \text{(Equation 2.42)}$$

$$\frac{K_1}{Q_1} = a_{K1} = (1 - \beta) \left(\frac{w}{r}\right)^{\beta} \qquad \text{(Equation 2.43)}$$

Finally, marginal costs per unit utility are now given by:

$$\frac{C_U}{\overline{U}} = e = p_0^{\phi} p_1^{1-\phi} \qquad \text{(Equation 2.44)}$$

2.3.2. Final equilibrium conditions

Goods market equilibrium conditions state that the total production of any good cannot be smaller than its respective demand:

$$Q_0 \geq \overline{U} \cdot \phi \cdot \left(\frac{p_1}{p_0}\right)^{1-\phi} \qquad \text{(Equation 2.45)}$$

$$Q_1 \geq \overline{U} \cdot (1 - \phi) \cdot \left(\frac{p_0}{p_1}\right)^{\phi} \qquad \text{(Equation 2.46)}$$

Hereby, total utility will always match the maximum value purchased:

$$U \geq \frac{wL + rK}{p_0^{\phi} p_1^{1-\phi}} = \frac{I}{e} \qquad \text{(Equation 2.47)}$$

Factor market equilibrium conditions state that the total demand of labor or capital can never be larger than its supply:

$$L \geq Q_0 \cdot \alpha \cdot \left(\frac{r}{w}\right)^{\alpha} + Q_1 \cdot \beta \cdot \left(\frac{r}{w}\right)^{\beta} \qquad \text{(Equation 2.48)}$$

$$K \geq Q_0 \cdot (1 - \alpha) \cdot \left(\frac{w}{r}\right)^{\alpha} + Q_1 \cdot (1 - \beta) \cdot \left(\frac{w}{r}\right)^{\beta} \qquad \text{(Equation 2.49)}$$

Zero profit conditions state that the price of certain goods will never exceed the price of their combined input factors:

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$$p_0 \leq w^{\alpha} \cdot r^{1-\alpha} \qquad\qquad \text{(Equation 2.50)}$$

$$p_1 \leq w^{\beta} \cdot r^{1-\beta} \qquad\qquad \text{(Equation 2.51)}$$

3. Methodology

Analyzing tariff implications upon the Dutch economy requires an extension of the basic 2x2x2 Heckscher-Ohlin model. Though empiric research hasn't particularly favored such an extension, we do attempt to construct a broad general equilibrium model by adding several countries, goods and deviations to our analysis. The predictive power of our model will rely on how much it manages to resemble each country's real input-output table. The final equilibrium of the extended model will evidently show if H-O theorems hold and how tariff reforms affect international trade, national welfare and production.

3.1. Extending the 2x2x2 model

The Netherlands' biggest trading partners are Germany, Belgium, France and the United Kingdom. These countries roughly account for 40% of all Dutch trade. Besides these four countries, the scope of the model can be increased by adding China, Japan, Italy and the United States. Together these eight countries account for 60% of Dutch worldwide trade and 70% of Dutch trade amongst EU member states. Including the Netherlands, there will be nine countries performing in the final model economy.

Next, the amount of goods in the model is increased from two to nine. Standard International Trade Classification (SITC) is a method used by the United Nations, designed to classify traded goods. With goods being continuously classified into new subcategories, the task of introducing every single traded good into the model is too large. Nevertheless, the primary division of goods sees the following categories arise:

Standard International Trade Classification (SITC 1 - Section)[2]	(Table 3.1)
0. Food and live animals	5. Chemicals and related products
1. Beverages and tobacco	6. Manufactured goods, classified chiefly by material
2. Crude materials, inedible, except fuels	7. Machinery and transport equipment
3. Mineral fuels, lubricant and related materials	8. Miscellaneous manufactures articles
4. Animal and vegetable oils, fats and waxes	9. Commodities and transactions not classified elsewhere in the SITC.

We use these ten categories, with the exception of category 4 (animal and vegetables oils, fats and waxes), to form nine aggregated goods in our model. In autarky, each country in our model produces and consumes all nine goods.

Unlike the conventional theory regarding the production of a good, we assume all nine produced goods to be integrated. This means that each good will be used as an intermediate good in each other's production. In order to simulate product integration later on, we will extend the production functions. Namely, each production function will contain three intermediate goods, alongside labor and capital. We intentionally limit ourselves to adding the three most intensively used intermediate goods to these production functions. It would certainly be possible to add an average of 65 intermediate goods used in the production of each good, though the potential increased accuracy of our equilibrium values wouldn't weigh up to the vast amount of extra time and effort required to do this.

As mentioned before, larger Heckscher-Ohlin models have a better chance of performing if assumptions are slightly relaxed. In our case, prices will not remain equal to unity in the benchmark equilibrium. This can be attributed to our production technologies, which are also not identical in each country. With each of nine countries said to produce nine integrated goods, the Cobb-Douglas production function of each

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[2] SITC, Revision 4 was accepted by the United Nations Statistical Commission at its thirty-seventh session (March 2006). (http://unstats.un.org/unsd/trade/sitcrev4.htm)

good is extended. After the input of intermediate goods (v) is added, each country's production function takes its own unique form. The subscripts of production share parameter α precisely denote each input factor. For example, α_{L0i} indicates the share of labor used in the production of good 0 in a certain country:

$$Q_0 = \frac{L_i^{\alpha_{L0i}} K_i^{\alpha_{K0i}} v_j^{\alpha_{j0i}} v_k^{\alpha_{k0i}} v_l^{(1-\alpha_{L0i}-\alpha_{K0i}-\alpha_{j0i}-\alpha_{k0i})}}{\alpha_{L0i}^{\alpha_{L0i}} \alpha_{K0i}^{\alpha_{K0i}} \alpha_{j0i}^{\alpha_{j0i}} \alpha_{k0i}^{\alpha_{k0i}} (1-\alpha_{L0i}-\alpha_{K0i}-\alpha_{j0i}-\alpha_{k0i})^{(1-\alpha_{L0i}-\alpha_{K0i}-\alpha_{j0i}-\alpha_{k0i})}}$$

(Equation 3.1)

$$Q_1 = \frac{L_i^{\alpha_{L1i}} K_i^{\alpha_{K1i}} v_j^{\alpha_{j1i}} v_k^{\alpha_{k1i}} v_l^{(1-\alpha_{L1i}-\alpha_{K1i}-\alpha_{j1i}-\alpha_{k1i})}}{\alpha_{L1i}^{\alpha_{L1i}} \alpha_{K1i}^{\alpha_{K1i}} \alpha_{j1i}^{\alpha_{j1i}} \alpha_{k1i}^{\alpha_{k1i}} (1-\alpha_{L1i}-\alpha_{K1i}-\alpha_{j1i}-\alpha_{k1i})^{(1-\alpha_{L1i}-\alpha_{K1i}-\alpha_{j1i}-\alpha_{k1i})}}$$

(Equation 3.2)

$$Q_2 = \frac{L_i^{\alpha_{L2i}} K_i^{\alpha_{K2i}} v_j^{\alpha_{j2i}} v_k^{\alpha_{k2i}} v_l^{(1-\alpha_{L2i}-\alpha_{K2i}-\alpha_{j2i}-\alpha_{k2i})}}{\alpha_{L2i}^{\alpha_{L2i}} \alpha_{K2i}^{\alpha_{K2i}} \alpha_{j2i}^{\alpha_{j2i}} \alpha_{k2i}^{\alpha_{k2i}} (1-\alpha_{L2i}-\alpha_{K2i}-\alpha_{j2i}-\alpha_{k2i})^{(1-\alpha_{L2i}-\alpha_{K2i}-\alpha_{j2i}-\alpha_{k2i})}}$$

(Equation 3.3)

$$Q_3 = \frac{L_i^{\alpha_{L3i}} K_i^{\alpha_{K3i}} v_j^{\alpha_{j3i}} v_k^{\alpha_{k3i}} v_l^{(1-\alpha_{L3i}-\alpha_{K3i}-\alpha_{j3i}-\alpha_{k3i})}}{\alpha_{L3i}^{\alpha_{L3i}} \alpha_{K3i}^{\alpha_{K3i}} \alpha_{j3i}^{\alpha_{j3i}} \alpha_{k3i}^{\alpha_{k3i}} (1-\alpha_{L3i}-\alpha_{K3i}-\alpha_{j3i}-\alpha_{k3i})^{(1-\alpha_{L3i}-\alpha_{K3i}-\alpha_{j3i}-\alpha_{k3i})}}$$

(Equation 3.4)

$$Q_5 = \frac{L_i^{\alpha_{L5i}} K_i^{\alpha_{K5i}} v_j^{\alpha_{j5i}} v_k^{\alpha_{k5i}} v_l^{(1-\alpha_{L5i}-\alpha_{K5i}-\alpha_{j5i}-\alpha_{k5i})}}{\alpha_{L5i}^{\alpha_{L5i}} \alpha_{K5i}^{\alpha_{K5i}} \alpha_{j5i}^{\alpha_{j5i}} \alpha_{k5i}^{\alpha_{k5i}} (1-\alpha_{L5i}-\alpha_{K5i}-\alpha_{j5i}-\alpha_{k5i})^{(1-\alpha_{L5i}-\alpha_{K5i}-\alpha_{j5i}-\alpha_{k5i})}}$$

(Equation 3.5)

$$Q_6 = \frac{L_i^{\alpha_{L6i}} K_i^{\alpha_{K6i}} v_j^{\alpha_{j6i}} v_k^{\alpha_{k6i}} v_l^{(1-\alpha_{L6i}-\alpha_{K6i}-\alpha_{j6i}-\alpha_{k6i})}}{\alpha_{L6i}^{\alpha_{L6i}} \alpha_{K6i}^{\alpha_{K6i}} \alpha_{j6i}^{\alpha_{j6i}} \alpha_{k6i}^{\alpha_{k6i}} (1-\alpha_{L6i}-\alpha_{K6i}-\alpha_{j6i}-\alpha_{k6i})^{(1-\alpha_{L6i}-\alpha_{K6i}-\alpha_{j6i}-\alpha_{k6i})}}$$

(Equation 3.6)

$$Q_7 = \frac{L_i^{\alpha_{L7i}} K_i^{\alpha_{K7i}} v_j^{\alpha_{j7i}} v_k^{\alpha_{k7i}} v_l^{(1-\alpha_{L7i}-\alpha_{K7i}-\alpha_{j7i}-\alpha_{k7i})}}{\alpha_{L7i}^{\alpha_{L7i}} \alpha_{K7i}^{\alpha_{K7i}} \alpha_{j7i}^{\alpha_{j7i}} \alpha_{k7i}^{\alpha_{k7i}} (1-\alpha_{L7i}-\alpha_{K7i}-\alpha_{j7i}-\alpha_{k7i})^{(1-\alpha_{L7i}-\alpha_{K7i}-\alpha_{j7i}-\alpha_{k7i})}}$$

(Equation 3.7)

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$$Q_8 = \frac{L_i^{\alpha_{L8i}} K_i^{\alpha_{K8i}} v_j^{\alpha_{j8i}} v_k^{\alpha_{k8i}} v_l^{(1-\alpha_{L8i}-\alpha_{K8i}-\alpha_{j8i}-\alpha_{k8i})}}{\alpha_{L8i}^{\alpha_{L8i}} \alpha_{K8i}^{\alpha_{K8i}} \alpha_{j8i}^{\alpha_{j8i}} \alpha_{k8i}^{\alpha_{k8i}} (1-\alpha_{L8i}-\alpha_{K8i}-\alpha_{j8i}-\alpha_{k8i})^{(1-\alpha_{L8i}-\alpha_{K8i}-\alpha_{j8i}-\alpha_{k8i})}}$$

(Equation 3.8)

$$Q_9 = \frac{L_i^{\alpha_{L9i}} K_i^{\alpha_{K9i}} v_j^{\alpha_{j9i}} v_k^{\alpha_{k9i}} v_l^{(1-\alpha_{L9i}-\alpha_{K9i}-\alpha_{j9i}-\alpha_{k9i})}}{\alpha_{L9i}^{\alpha_{L9i}} \alpha_{K9i}^{\alpha_{K9i}} \alpha_{j9i}^{\alpha_{j9i}} \alpha_{k9i}^{\alpha_{k9i}} (1-\alpha_{L9i}-\alpha_{K9i}-\alpha_{j9i}-\alpha_{k9i})^{(1-\alpha_{L9i}-\alpha_{K9i}-\alpha_{j9i}-\alpha_{k9i})}}$$

(Equation 3.9)

i represents NL, DE, BE, FR, UK, IT CN, JP or US.
j, k and l denote any of nine produced goods, used as intermediate input. Each country has unique production composition for each good.

Lastly, we extend the household's representative Cobb-Douglas utility function. Each of nine traded goods is consumed according to a certain preference, thus added into the total consumption function:

$$U_i = \frac{C_0^{\phi_{0i}} C_1^{\phi_{1i}} C_2^{\phi_{2i}} C_3^{\phi_{3i}} C_5^{\phi_{5i}} C_6^{\phi_{6i}} C_7^{\phi_{7i}} C_8^{\phi_{8i}} C_9^{\left(1-\Sigma_{k=0,k\neq4}^{8} \phi_{ki}\right)}}{\phi_{0i}^{\phi_{0i}} \phi_{1i}^{\phi_{1i}} \phi_{2i}^{\phi_{2i}} \phi_{3i}^{\phi_{3i}} \phi_{5i}^{\phi_{5i}} \phi_{6i}^{\phi_{6i}} \phi_{7i}^{\phi_{7i}} \phi_{8i}^{\phi_{8i}} \left(1-\Sigma_{k=0,k\neq4}^{8} \phi_{ki}\right)^{\left(1-\Sigma_{k=0,k\neq4}^{8} \phi_{ki}\right)}}$$

i represents NL, DE, BE, FR, UK, IT, CN, JP or US (Equation 3.10)

3.2. Introducing GAMS

We estimate our comparative static model through GAMS (General Algebraic Modeling System) software. We construct our model by translating all inherent endogenous positive variables, unique parameter values and equations into the correct programming syntax. One country at a time, the trading equilibrium is formed abiding by aforementioned market clearing conditions. As the economy is modeled through a square system of equations, each variable is eventually linked to its corresponding equation. The following subsections use the Netherlands as example country, when elaborating on the endogenous variables and parameter values in the model equations. These variable input names are near identical for all other countries, keeping in mind that only the country code at the back of the variable changes. We apply 'DE' to

Germany, 'BE' to Belgium, 'FR' to France, 'UK' to the United Kingdom, 'IT' to Italy, 'CN' to China, 'JP' to Japan and 'US' to the United States of America.

3.2.1. Endogenous variables

The main endogenous variables which determine the equilibrium are listed below:

GAMS input	Variable	GAMS input	Variable
X0NL	Production of good	PX0NL	Price of good 0
X1NL	Production of good	PX1NL	Price of good 1
X2NL	Production of good	PX2NL	Price of good 2
X3NL	Production of good	PX3NL	Price of good 3
X5NL	Production of good	PX5NL	Price of good 5
X6NL	Production of good	PX6NL	Price of good 6
X7NL	Production of good	PX7NL	Price of good 7
X8NL	Production of good	PX8NL	Price of good 8
X9NL	Production of good	PX9NL	Price of good 9
WNL	Production of	PWNL	Price per unit
PLNL	Price per unit labor	CONSNL	Total household
PKNL	Price per unit		

As all countries are able to trade freely amongst each other, an additional set of endogenous variables is required. This set captures all the possible imports that can be attributed to a single country.

GAMS input	Variable description	GAMS input	Variable description
X0DE_NL	Import of good 0 by NL from	X0BE_NL	Import of good 0 by NL from
X1DE_NL	Import of good 1 by NL from	X1BE_NL	Import of good 1 by NL from
X2DE_NL	Import of good 2 by NL from	X2BE_NL	Import of good 2 by NL from
X3DE_NL	Import of good 3 by NL from	X3BE_NL	Import of good 3 by NL from
X5DE_NL	Import of good 5 by NL from	X5BE_NL	Import of good 5 by NL from
X6DE_NL	Import of good 6 by NL from	X6BE_NL	Import of good 6 by NL from
X7DE_NL	Import of good 7 by NL from	X7BE_NL	Import of good 7 by NL from
X8DE_NL	Import of good 8 by NL from	X8BE_NL	Import of good 8 by NL from
X9DE_NL	Import of good 9 by NL from	X9BE_NL	Import of good 9 by NL from

X0FR_NL	Import of good 0 by NL from	**X0UK_NL**	Import of good 0 by NL from
X1FR_NL	Import of good 1 by NL from	**X1UK_NL**	Import of good 1 by NL from
X2FR_NL	Import of good 2 by NL from	**X2UK_NL**	Import of good 2 by NL from
X3FR_NL	Import of good 3 by NL from	**X3UK_NL**	Import of good 3 by NL from
X5FR_NL	Import of good 5 by NL from	**X5UK_NL**	Import of good 5 by NL from
X6FR_NL	Import of good 6 by NL from	**X6UK_NL**	Import of good 6 by NL from
X7FR_NL	Import of good 7 by NL from	**X7UK_NL**	Import of good 7 by NL from
X8FR_NL	Import of good 8 by NL from	**X8UK_NL**	Import of good 8 by NL from
X9FR_NL	Import of good 9 by NL from	**X9UK_NL**	Import of good 9 by NL from
X0IT_NL	Import of good 0 by NL from	**X0CN_NL**	Import of good 0 by NL from
X1IT_NL	Import of good 1 by NL from	**X1CN_NL**	Import of good 1 by NL from
X2IT_NL	Import of good 2 by NL from	**X2CN_NL**	Import of good 2 by NL from
X3IT_NL	Import of good 3 by NL from	**X3CN_NL**	Import of good 3 by NL from
X5IT_NL	Import of good 5 by NL from	**X5CN_NL**	Import of good 5 by NL from
X6IT_NL	Import of good 6 by NL from	**X6CN_NL**	Import of good 6 by NL from
X7IT_NL	Import of good 7 by NL from	**X7CN_NL**	Import of good 7 by NL from
X8IT_NL	Import of good 8 by NL from	**X8CN_NL**	Import of good 8 by NL from
X9IT_NL	Import of good 9 by NL from	**X9CN_NL**	Import of good 9 by NL from
X0JP_NL	Import of good 0 by NL from	**X0US_NL**	Import of good 0 by NL from
X1JP_NL	Import of good 1 by NL from	**X1US_NL**	Import of good 1 by NL from
X2JP_NL	Import of good 2 by NL from	**X2US_NL**	Import of good 2 by NL from
X3JP_NL	Import of good 3 by NL from	**X3US_NL**	Import of good 3 by NL from
X5JP_NL	Import of good 5 by NL from	**X5US_NL**	Import of good 5 by NL from
X6JP_NL	Import of good 6 by NL from	**X6US_NL**	Import of good 6 by NL from
X7JP_NL	Import of good 7 by NL from	**X7US_NL**	Import of good 7 by NL from
X8JP_NL	Import of good 8 by NL from	**X8US_NL**	Import of good 8 by NL from
X9JP_NL	Import of good 9 by NL from	**X9US_NL**	Import of good 9 by NL from

3.2.2. Parameter values

As previously explained, input-output tables offer an insight as to how much of a certain industries products are used in the production of another industry's goods. Together with inherent statistics regarding wages and capital rent, we can derive each endogenous variable's share in the production of any good.[3] Similarly, listed statistics on consumption expenditure allow us to derive the different preferences that

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households hold towards certain goods. Additionally, trade weighted tariff averages are conveniently listed in the Tariff Analysis Online facility provided by the World Trade Organization (WTO).[4]

As our levels of labor[5] and capital endowments[6] are directly fed into the model, the subsequent determination of these values requires a bit more attention. We pick 'working population' and 'consumption of fixed capital' to be our economic indicators from which we derive our respective values for L and K. Both sets of indicators are equally shrunk in order to get user friendly values, keeping relative proportions intact. Lastly, an extra technological deflator is added to our capital estimation so to guide our equilibrium variables towards even more readily interpretable values. The value of this technological deflator (A) is determined such that labor and capital endowments approach each other, whilst remaining in ratio. Table (3.2) shows how the real values of working population (L^R) and consumption of fixed capital (K^R) are transformed into the endowment values used in our model.

Technological deflator	(Table 3.2)

Labor: $\quad \dfrac{L_i^R}{1000000} = L_i$ $\qquad$ **Capital:** $\quad \dfrac{A \cdot K_i^R}{1000000} = K_i$

Where A is 0.0001

i represents NL, DE, BE, FR, UK, IT CN, JP or US.

Appendix table (7.1.1) provides the exact calculation of all L and K values for each country.

GAMS parameter	Parameter description	GAMS parameter	Parameter description
alphaL0_NL	Labor share for good X0NL	**alphaL8_NL**	Labor share for good X8NL
alphaK0_NL	Capital share for good	**alphaK8_NL**	Capital share for good
alpha90_NL	Share of good X9NL in	**alpha98_NL**	Share of good X9NL in

alpha10_NL	Share of good X1NL in	**alpha68_NL**	Share of good X6NL in
alphaL1_NL	Labor share for good X1NL	**alphaL9_NL**	Labor share for good X9NL
alphaK1_NL	Capital share for good	**alphaK9_NL**	Capital share for good
alpha91_NL	Share of good X9NL in	**alpha69_NL**	Share of good X6NL in
alpha01_NL	Share of good X0NL in	**alpha89_NL**	Share of good X8NL in
alphaL2_NL	Labor share for good X2NL	**phi0NL**	Consumption share of good
alphaK2_NL	Capital share for good	**phi1NL**	Consumption share of good
alpha92_NL	Share of good X9NL in	**phi2NL**	Consumption share of good
alpha62_NL	Share of good X6NL in	**phi3NL**	Consumption share of good
alphaL3_NL	Labor share for good X3NL	**phi5NL**	Consumption share of good
alphaK3_NL	Capital share for good	**phi6NL**	Consumption share of good
alpha23_NL	Share of good X2NL in	**phi7NL**	Consumption share of good
alpha93_NL	Share of good X9NL in	**phi8NL**	Consumption share of good
alphaL5_NL	Labor share for good X5NL	**phi8NL**	Consumption share of good
alphaK5_NL	Capital share for good	**TX0NL**	NL import tariff on good 0
alpha95_NL	Share of good X9NL in	**TX1NL**	NL import tariff on good 1
alpha35_NL	Share of good X3NL in	**TX2NL**	NL import tariff on good 2
alphaL6_NL	Labor share for good X6NL	**TX3NL**	NL import tariff on good 3
alphaK6_NL	Capital share for good	**TX5NL**	NL import tariff on good 5
alpha96_NL	Share of good X9NL in	**TX6NL**	NL import tariff on good 6
alpha56_NL	Share of good X5NL in	**TX7NL**	NL import tariff on good 7
alphaL7_NL	Labor share for good X7NL	**TX8NL**	NL import tariff on good 8
alphaK7_NL	Capital share for good	**TX9NL**	NL import tariff on good 9
alpha97_NL	Share of good X9NL in	**LNL**	Labor endowment
alpha67_NL	Share of good X6NL in	**KNL**	Capital endowment

3.2.3. Model equations

As shown in section 2.4, equilibrium conditions regarding the goods market, the factor market and firm profits are previously formed. These equations stabilize the model by enforcing our assumptions, thus guiding all endogenous variables towards equilibrium values. The goods market conditions, factor market conditions and zero profit conditions for the Dutch economy are listed below.

Zero profit conditions ensure that modeled firms always match their goods prices to marginal costs. The price of each good is set to be equal or smaller than the price of all

its respective input combined. We treat utility as a good, with its own respective zero profit condition.

GAMS equation name	Equation description	Complementary variable
PRF_X0NL	Zero profit condition for good 0	**X0NL**
	$w_{nl}^{\alpha_{L0nl}} r_{nl}^{\alpha_{K0nl}} p_{9nl}^{\alpha_{90nl}} p_{1nl}^{\alpha_{10nl}} p_{5nl}^{(1-\alpha_{L0nl}-\alpha_{K0nl}-\alpha_{90nl}-\alpha_{10nl})} \geq p_{0nl}$	
	(Equation 3.11)	
PRF_X1NL	Zero profit condition for good	**X1NL**
	$w_{nl}^{\alpha_{L1nl}} r_{nl}^{\alpha_{K1nl}} p_{9nl}^{\alpha_{91nl}} p_{0nl}^{\alpha_{010nl}} p_{6nl}^{(1-\alpha_{L1nl}-\alpha_{K1nl}-\alpha_{91nl}-\alpha_{01nl})} \geq p_{1nl}$	
	(Equation 3.21)	
PRF_X2NL	Zero profit condition for good	**X2NL**
	$w_{nl}^{\alpha_{L2nl}} r_{nl}^{\alpha_{K2nl}} p_{9nl}^{\alpha_{92nl}} p_{6nl}^{\alpha_{62nl}} p_{8nl}^{(1-\alpha_{L2nl}-\alpha_{K2nl}-\alpha_{92nl}-\alpha_{62nl})} \geq p_{2nl}$	
	(Equation 3.22)	
PRF_X3NL	Zero profit condition for good	**X3NL**
	$w_{nl}^{\alpha_{L3nl}} r_{nl}^{\alpha_{K3nl}} p_{2nl}^{\alpha_{23nl}} p_{9nl}^{\alpha_{93nl}} p_{5nl}^{(1-\alpha_{L3nl}-\alpha_{K3nl}-\alpha_{23nl}-\alpha_{93nl})} \geq p_{3nl}$	
	(Equation 3.23)	
PRF_X5NL	Zero profit condition for good	**X5NL**
	$w_{nl}^{\alpha_{L5nl}} r_{nl}^{\alpha_{K5nl}} p_{9nl}^{\alpha_{95nl}} p_{3nl}^{\alpha_{35nl}} p_{6nl}^{(1-\alpha_{L5nl}-\alpha_{K5nl}-\alpha_{95nl}-\alpha_{35nl})} \geq p_{5nl}$	
	(Equation 3.24)	
PRF_X6NL	Zero profit condition for good	**X6NL**
	$w_{nl}^{\alpha_{L6nl}} r_{nl}^{\alpha_{K6nl}} p_{9nl}^{\alpha_{96nl}} p_{5nl}^{\alpha_{56nl}} p_{7nl}^{(1-\alpha_{L6nl}-\alpha_{K6nl}-\alpha_{96nl}-\alpha_{56nl})} \geq p_{6nl}$	
	(Equation 3.25)	
PRF_X7NL	Zero profit condition for good	**X7NL**
	$w_{nl}^{\alpha_{L7nl}} r_{nl}^{\alpha_{K7nl}} p_{9nl}^{\alpha_{97nl}} p_{6nl}^{\alpha_{67nl}} p_{8nl}^{(1-\alpha_{L7nl}-\alpha_{K7nl}-\alpha_{97nl}-\alpha_{67nl})} \geq p_{7nl}$	
	(Equation 3.26)	
PRF_X8NL	Zero profit condition for good	**X8NL**

$$w_{nl}^{\alpha_{L8nl}} r_{nl}^{\alpha_{K8nl}} p_{9nl}^{\alpha_{98nl}} p_{6nl}^{\alpha_{68nl}} p_{7nl}^{(1-\alpha_{L8nl}-\alpha_{K8nl}-\alpha_{98nl}-\alpha_{68nl})} \geq p_{8nl}$$

(Equation 3.27)

PRF_X9NL	Zero profit condition for good	X9NL

$$w_{nl}^{\alpha_{L9nl}} r_{nl}^{\alpha_{K9nl}} p_{6nl}^{\alpha_{69nl}} p_{8nl}^{\alpha_{89nl}} p_{3nl}^{(1-\alpha_{L9nl}-\alpha_{K9nl}-\alpha_{69nl}-\alpha_{89nl})} \geq p_{9nl}$$

(Equation 3.28)

PRF_WNL	Zero profit condition for good	WNL

$$p_{0nl}^{\phi_{0nl}} p_{1nl}^{\phi_{1nl}} p_{2nl}^{\phi_{2nl}} p_{3nl}^{\phi_{3nl}} p_{5nl}^{\phi_{5nl}} p_{6nl}^{\phi_{6nl}} p_{7nl}^{\phi_{7nl}} p_{8nl}^{\phi_{8nl}} p_{9nl}^{(1-\sum_{k=0,k\neq4}^{8}\phi_{knl})} \geq p_{wnl}$$

(Equation 3.29)

Goods market clearing conditions see to it that the demand for a good never exceeds the supply. Without excess demand, prices will not rise above marginal costs and perfect competition is maintained. As each good has its own unique composition and demand, the equations differ in length. In order to benefit notation, we assign each country code a unique number, ranging from one to eight. Variable subscripts denote goods and country of production. Variable superscripts denote to which country a certain good is exported.

Country code	Number	Country code	Number
de	1	it	5
be	2	cn	6
fr	3	jp	7
uk	4	us	8

GAMS equation name	Equation description	Complementary variable
MKT_X0NL	Goods market clearing condition for good	PX0NL

$$v_{0nl} + \sum_{i=1}^{8} v_{0i}^{nl} \geq \frac{U_{nl} * \phi_{0nl} * C_{Unl}}{p_{0nl}} + \frac{\alpha_{01nl} * v_{1nl} * p_{1nl}}{p_{0nl}} + \sum_{i=1}^{8} v_{0nl}^{i}$$

(Equation 3.29)

MKT_X1NL	Goods market clearing condition for good	PX1NL

$$v_{1nl} + \sum_{i=1}^{8} v_{1i}^{nl} \geq \frac{U_{nl} * \phi_{1nl} * C_{Unl}}{p_{1nl}} + \frac{\alpha_{10nl} * v_{0nl} * p_{0nl}}{p_{1nl}} + \sum_{i=1}^{8} v_{1nl}^{i}$$

(Equation 3.30)

MKT_X2NL   Goods market clearing condition for good   **PX2NL**

$$v_{2nl} + \sum_{i=1}^{8} v_{2i}^{nl} \geq \frac{U_{nl} * \phi_{2nl} * C_{Unl}}{p_{2nl}} + \frac{\alpha_{23nl} * v_{3nl} * p_{3nl}}{p_{2nl}} + \sum_{i=1}^{8} v_{2nl}^{i}$$

(Equation 3.31)

MKT_X3NL   Goods market clearing condition for good   **PX3NL**

$$v_{3nl} + \sum_{i=1}^{8} v_{3i}^{nl} \geq \frac{U_{nl} * \phi_{3nl} * C_{Unl}}{p_{3nl}} + \frac{\alpha_{35nl} * v_{5nl} * p_{5nl}}{p_{3nl}}$$

$$+ \frac{(1 - \alpha_{L9nl} - \alpha_{K9nl} - \alpha_{69nl} - \alpha_{89nl}) * v_{9nl} * p_{9nl}}{p_{3nl}} + \sum_{i=1}^{8} v_{3nl}^{i}$$

(Equation 3.32)

MKT_X5NL   Goods market clearing condition for good   **PX5NL**

$$v_{5nl} + \sum_{i=1}^{8} v_{5i}^{nl} \geq \frac{U_{nl} * \phi_{5nl} * C_{Unl}}{p_{5nl}} + \frac{\alpha_{35nl} * v_{5nl} * p_{3nl}}{p_{5nl}}$$

$$+ \frac{(1 - \alpha_{L3nl} - \alpha_{K3nl} - \alpha_{23nl} - \alpha_{93nl}) * v_{9nl} * p_{3nl}}{p_{5nl}}$$

$$+ \frac{\alpha_{56nl} * v_{6nl} * p_{6nl}}{p_{5nl}} + \sum_{i=1}^{8} v_{5nl}^{i}$$

(Equation 3.33)

MKT_X6NL   Goods market clearing condition for good   **PX6NL**

$$v_{6nl} + \sum_{i=1}^{8} v_{6i}^{nl} \geq \frac{U_{nl} * \phi_{6nl} * C_{Unl}}{p_{6nl}} + \frac{(1 - \alpha_{L1nl} - \alpha_{K1nl} - \alpha_{91nl} - \alpha_{01nl}) * v_{1nl} * p_{1nl}}{p_{6nl}}$$

$$+ \frac{\alpha_{62nl} * v_{2nl} * p_{2nl}}{p_{6nl}} + \frac{(1 - \alpha_{L5nl} - \alpha_{K5nl} - \alpha_{95nl} - \alpha_{35nl}) * v_{5nl} * p_{5nl}}{p_{6nl}}$$

$$+ \frac{\alpha_{67nl} * v_{7nl} * p_{7nl}}{p_{6nl}} + \frac{\alpha_{68nl} * v_{8nl} * p_{8nl}}{p_{6nl}} + \frac{\alpha_{69nl} * v_{9nl} * p_{9nl}}{p_{6nl}} + \sum_{i=1}^{8} v_{6nl}^{i}$$

(Equation 3.34)

MKT_X7NL	Goods market clearing condition for good	**PX7NL**

$$v_{7nl} + \sum_{i=1}^{8} v_{7i}^{nl} \geq \frac{U_{nl} * \phi_{7nl} * C_{Unl}}{p_{7nl}} + \frac{(1 - \alpha_{L6nl} - \alpha_{K6nl} - \alpha_{96nl} - \alpha_{56nl}) * v_{6nl} * p_{6nl}}{p_{7nl}}$$

$$+ \frac{(1 - \alpha_{L8nl} - \alpha_{K8nl} - \alpha_{98nl} - \alpha_{68nl}) * v_{8nl} * p_{8nl}}{p_{7nl}} + \sum_{i=1}^{8} v_{7nl}^{i}$$

(Equation 3.35)

MKT_X8NL	Goods market clearing condition for good	**PX8NL**

$$v_{8nl} + \sum_{i=1}^{8} v_{8i}^{nl} \geq \frac{U_{nl} * \phi_{8nl} * C_{Unl}}{p_{8nl}} + \frac{(1 - \alpha_{L2nl} - \alpha_{K2nl} - \alpha_{92nl} - \alpha_{62nl}) * v_{2nl} * p_{2nl}}{p_{8nl}}$$

$$+ \frac{(1 - \alpha_{L7nl} - \alpha_{K7nl} - \alpha_{97nl} - \alpha_{67nl}) * v_{7nl} * p_{7nl}}{p_{8nl}} + \frac{\alpha_{89nl} * v_{9nl} * p_{9nl}}{p_{8nl}}$$

$$+ \sum_{i=1}^{8} v_{8nl}^{i}$$

(Equation 3.36)

MKT_X9NL	Goods market clearing condition for good	**PX9NL**

$$v_{9nl} + \sum_{i=1}^{8} v_{9i}^{nl} \geq \frac{U_{nl} * 1 - \sum_{k=0,k\neq4}^{8} \phi_{ki} * C_{Unl}}{p_{9nl}} + \sum_{k=0,k\neq4}^{8} \frac{\alpha_{9knl} * v_{knl} * p_{knl}}{p_{9nl}} + \sum_{i=1}^{8} v_{9nl}^{i}$$

(Equation 3.37)

MKT_WNL	Goods market clearing condition for good	**PWNL**

$$U_{nl} = \frac{w_{nl}L_{nl} + r_{nl}K_{nl}}{p_{0nl}^{\phi_{0nl}} p_{1nl}^{\phi_{1nl}} p_{2nl}^{\phi_{2nl}} p_{3nl}^{\phi_{3nl}} p_{5nl}^{\phi_{5nl}} p_{6nl}^{\phi_{6nl}} p_{7nl}^{\phi_{7nl}} p_{8nl}^{\phi_{8nl}} p_{9nl}^{(1 - \sum_{k=0,k\neq4}^{8} \phi_{knl})}}$$

(Equation 3.38)

Factor market equilibrium conditions make sure that labor and capital endowments always suffice in producing all goods demanded. As mentioned before, we do not find unemployment in the model.

GAMS equation name	Equation description	Complementary variable
MKT_LNL	Factor market clearing condition for labor $$L_{nl} \geq \sum_{k=0,k \neq 4}^{9} \frac{\alpha_{Lknl} * v_{knl} * p_{knl}}{w_{nl}}$$ (Equation 3.39)	**PLNL**
MKT_KNL	Factor market clearing condition for $$K_{nl} \geq \sum_{k=0,k \neq 4}^{9} \frac{\alpha_{Kknl} * v_{knl} * p_{knl}}{r_{nl}}$$ (Equation 3.40)	**PKNL**

Furthermore, the equation capturing total household income concludes our list of model equations for the Netherlands.

GAMS equation name	Equation description	Complementary variable
I_CONSNL	Total household income $$I = w_{nl}L_{nl} + r_{nl}K_{nl}$$ (Equation 3.41)	**CONSNL**

3.3. Establishing GAMS model strength

After entering all countries' endogenous variables, parameter values and equilibrium equations, we run a benchmark simulation on our model economy. Table (3.3) includes al parameter values of the benchmark equilibrium.

Benchmark equilibrium set-up (Table 3.3)

		NL	DE	BE	FR	UK	IT	CN	JP	US
Tariff good 0	**TX0**	10%	10%	10%	10%	10%	10%	9%	11%	6%
Tariff good 1	**TX1**	10%	14%	14%	14%	14%	14%	13%	9%	7%
Tariff good 2	**TX2**	5%	5%	5%	5%	5%	5%	6%	1%	5%
Tariff good 3	**TX3**	3%	3%	3%	3%	3 %	3%	6%	4%	0%
Tariff good 5	**TX5**	4%	4%	4%	4%	4%	4%	6%	6%	3%
Tariff good 6	**TX6**	9%	9%	9%	9%	9%	9%	8%	6%	9%
Tariff good 7	**TX7**	4%	4%	4%	4%	4%	4%	8%	5%	3%
Tariff good 8	**TX8**	6%	6%	6%	6%	6%	6%	10%	13%	5%
Tariff good 9	**TX9**	0%	0%	0%	0%	0%	0%	0%	0%	0%
Labor endowment	**(L)**	8	39	5	26	29	23	612	58	140
Capital endowment	**(K)**	17	67	11	58	39	44	286	109	275
Capital ratio		2.13	1.72	2.20	2.23	1.34	1.91	0.47	1.88	1.96

EU member state import tariffs only apply to external, non-EU, trading partners.

Table (3.4) contains the resulting input-output table for the Netherlands. All product quantities have been multiplied by their respective equilibrium prices. The sum of each column is zero, meaning the value of inputs equals the value of output for each good. Balanced columns thus imply that no profits are made. The consumer column is near perfectly balanced, suggesting the cumulative wage and rent that households put in equals the amount of welfare received. The highlighted figures in the last column represent net exports; negative values in this column indicate imports. When we compare these trade figures for all our countries, we find that roughly 61% of trade flows are correctly predicted in our benchmark. All other benchmark trading equilibrium input-output tables can be found in the appendix section (8.2). The exact comparison of trade figures is displayed in the appendix table (8.3).

3.4. GAMS simulations and expectations

In this section we run various simulations containing several instances of tariff reform. We are interested in the welfare effects, production changes and trade implications that tariff reform may have. Based on theoretical conclusions from the Heckscher-Ohlin model, we are able to predict what these implications may be. The final results of our simulations will show new welfare levels and trade patterns, presumably following H-O theorems. Table (3.4) displays the capital endowment rations of all countries. In relative terms, France is relatively the most capital abundant country in the model. China is the only country which has more labor than capital, thus the most labor abundant country in our model.

Capital endowment ratios								(Table 3.5)
NL	DE	BE	FR	UK	IT	CN	JP	US
2.13	1.72	2.20	2.23	1.34	1.91	0.47	1.88	1.96

3.4.1. Case 1: Unilateral tariff drop of a single good

A unilateral tariff drop of a single good is simulated by setting the import tariff of good 6, representing manufactured goods, in the Netherlands to zero. The Dutch production function and corresponding parameter values for good 6 show it to be relatively labor intensive[7]:

$$Q_{6=}L_{NL}^{0.33}K_{NL}^{0.06}v_9^{0.44}v_1^{0.08}v_5^{(1-0.33-0.06-0.44-0.08)} * SF_6 \qquad \text{(Equation 3.44)}$$

Elimination of an import tariff will increase trade, which will have a positive effect on Dutch welfare ceteris paribus. Like in our benchmark case, we expect Dutch production to stay focused on capital intensive good 2. As importing good 6 becomes less costly, we also expect the Dutch domestic demand for good 6 to decrease. This drop in demand will cause a drop in the relative price of the good. Ceteris paribus, this should cause a relative decrease in wage as the capital rent relatively increases. As no import

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[7] Production shares have been derived from the real input-output matrix figure XXX

tariff is levied towards China, Japan and the US, we should see the international prices of good 6 converge more.

All other tariff values remain untouched as this simulation focuses only on the welfare levels and trade implications following such an isolated tariff removal. Altered variables are highlighted in table (3.6).

Case 1 set-up: Tariff levels[8] and endowments[9]		NL	DE	BE	FR	UK	IT	CN	JP	US
Tariff good 0	TX0	10%	10%	10%	10%	10%	10%	9%	11%	6%
Tariff good 1	TX1	14%	14%	14%	14%	14%	14%	13%	9%	7%
Tariff good 2	TX2	5%	5%	5%	5%	5%	5%	6%	1%	5%
Tariff good 3	TX3	3%	3%	3%	3%	3%	3%	6%	4%	.2%
Tariff good 5	TX5	4%	4%	4%	4%	4%	4%	6%	6%	3%
Tariff good 6	TX6	0%	9%	9%	9%	9%	9%	8%	6%	9%
Tariff good 7	TX7	4%	4%	4%	4%	4%	4%	8%	5%	3%
Tariff good 8	TX8	6%	6%	6%	6%	6%	6%	10%	13%	5%
Tariff good 9	TX9	0%	0%	0%	0%	0%	0%	0%	0%	0%
Labor endowment	(L)	8	39	5	26	29	23	612	58	140
Capital endowment	(K)	17	67	11	58	39	44	286	109	275
Capital ratio		2.13	1.72	2.20	2.23	1.34	1.91	0.47	1.88	1.96

EU member state import tariffs only apply to external, non-EU, trading partners.

3.4.2. Case 2: Unilateral tariff drop of all a country's goods

A unilateral tariff drop of all a country's goods is simulated by setting the Dutch import tariffs of good 0 through good 9 to zero. The factor share parameter values of Dutch production can be found in the GAMS model code (8.4) in the appendix. Alongside good

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[8] Simple and trade-weighted tariff averages, retrieved from the WTO Tariff Analysis Online database at http://tao.wto.org/

[9] Total labor force and gross capital formation, retrieved from the dataset: Population and Labor force at http://stats.oecd.org and the dataset: World development indicators. http://data.worldbank.org/ respectively.

6, we can also label good 1, good 5, good 7, good 8, good 9 to be relatively labor intensive. Only good 0 and good 2 in Dutch production are relatively capital intensive. Production of good 3 requires equal amount of labor and capital, alongside a big share of good 2 as intermediate input.

As reasoned before, welfare is expected to increase as trade increases. This time we may expect a larger increase as more than one distortionary tariff is removed. Because all Dutch import tariffs are dropped, domestic demand for all goods will decrease. As the Netherlands is relatively capital abundant, we may expect exports and production of labor intensive goods to increase. Production and exports of capital intensive goods will increase. Price levels of Dutch goods are assumed to drop, due to increasing specialization in all markets. As more labor intensive goods see their price drop than capital intensive goods, it may be expected that the wage rate will drop relative to the capital rent. Finally, goods prices will once more converge to the same levels in the intra-EU market.

All other tariff values remain untouched as this simulation focuses only on the welfare levels and trade implications following the one-sided abolishment of Dutch import tariffs. Altered variables are highlighted in table (3.7).

Case 2 set-up: Tariff levels and endowments										(Table 3.7)
		NL	DE	BE	FR	UK	IT	CN	JP	US
Tariff good 0	TX0	0%	10%	10%	10%	10%	10%	9%	11%	6%
Tariff good 1	TX1	0%	14%	14%	14%	14%	14%	13%	9%	7%
Tariff good 2	TX2	0%	5%	5%	5%	5%	5%	6%	1%	5%
Tariff good 3	TX3	0%	3%	3%	3%	3%	3%	6%	4%	.2%
Tariff good 5	TX5	0%	4%	4%	4%	4%	4%	6%	6%	3%
Tariff good 6	TX6	0%	9%	9%	9%	9%	9%	8%	6%	9%
Tariff good 7	TX7	0%	4%	4%	4%	4%	4%	8%	5%	3%
Tariff good 8	TX8	0%	6%	6%	6%	6%	6%	10%	13%	5%
Tariff good 9	TX9	0%	0%	0%	0%	0%	0%	0%	0%	0%
Labor	(L)	8	39	5	26	29	23	612	58	140

endowment									
Capital endowment	**(K)**	17	67	11	58	39	44	286	109	275
Capital ratio		2.13	1.72	2.20	2.23	1.34	1.91	0.47	1.88	1.96

EU member state import tariffs only apply to external, non-EU, trading partners.

3.4.3. Case 3: Multilateral tariff drop

We simulate the effects of multilateral tariff agreements by creating a replacement benchmark equilibrium, which does not take into account the intra-EU tariff elimination of 1968. The first benchmark result from Table (4.1) becomes our targeted output table, illustrating trade flows under the presently effective multilateral tariff agreement.

In this case, we expect welfare levels to display their biggest increase. As tariffs on all goods are eliminated in six different countries, welfare levels are expected to rise for all EU participants. The Netherlands is the third most relatively capital abundant country within the economic model. With China, Japan and the US excluded from the free trade zone, its comparative advantage will become less significant. Hence, we presume Dutch production and exports of capital intensive good 2 to relatively decrease. The multilateral trade agreement will greatly induce free trade. More free trade increases production specialization, which will have each country produce certain goods at which they have a comparative advantage. This particular tariff reform is big enough to affect demand and supply on world level. World demand for goods as intermediate input and goods for consumption will increase such that world prices will also increase. Increased demand for factor inputs will see wages and rent rise accordingly. Moreover, as the aforementioned Dutch production of capital intensive goods relatively decreases, we can expect to see capital rent relatively decrease and wages relatively increase. Finally, as trade has freed up, goods and factor price levels are assumed to partially converge in the participating countries.

Once more, all variables take benchmark values, with the important remark that all tariffs apply to all countries. Table (4.4) represents our new benchmark values in this

case analysis. Whereas table (4.1) encloses the variables resulting from multilateral tariff reform.

Case 3 set-up: Tariff levels and endowments									(Table 3.8)
		NL	**DE**	**BE**	**FR**	**UK**	**IT**	**CN**	**JP**	**US**
Tariff good 0	**TX0**	10%	10%	10%	10%	10%	10%	9%	11%	6%
Tariff good 1	**TX1**	14%	14%	14%	14%	14%	14%	13%	9%	7%
Tariff good 2	**TX2**	5%	5%	5%	5%	5%	5%	6%	1%	5%
Tariff good 3	**TX3**	3%	3%	3%	3%	3%	3%	6%	4%	.2%
Tariff good 5	**TX5**	4%	4%	4%	4%	4%	4%	6%	6%	3%
Tariff good 6	**TX6**	9%	9%	9%	9%	9%	9%	8%	6%	9%
Tariff good 7	**TX7**	4%	4%	4%	4%	4%	4%	8%	5%	3%
Tariff good 8	**TX8**	6%	6%	6%	6%	6%	6%	10%	13%	5%
Tariff good 9	**TX9**	0%	0%	0%	0%	0%	0%	0%	0%	0%
Labor endowment	**(L)**	8	39	5	26	29	23	612	58	140
Capital endowment	**(K)**	17	67	11	58	39	44	286	109	275
Capital ratio		2.13	1.72	2.20	2.23	1.34	1.91	0.47	1.88	1.96
								All import tariffs apply to all trading partners.		

3.4.4. Case 4: Nexit

A 'Nexit' simulates a situation in which the Netherlands would decide to leave the EU. In this simulation, we assume the Netherlands will receive the same trading conditions as the other non-EU countries in the model.

As the Netherlands is no longer apart of the intra-EU market, we can assume trade becomes more costly. Welfare levels are expected to drop to a lower level. The same might apply to other countries in the intra-EU market, but presumably to a lesser extent. With endowments remaining unchanged, we expect the Netherlands to produce and export good 0 and good 2. In a fine display of protectionism, import tariffs will increase the demand for all domestic goods. Inherently, as most Dutch goods prove to be labor

intensive, the relative demand for labor increases. We can assume this leads to a relative increase in wage levels and a decrease in capital rent. With less trade it is also probable that we'll see Dutch goods prices diverge from the EU values. Relatively increased demand for Dutch capital intensive goods may see capital rent increase and wages rates decrease. Less trade will see goods and factor prices diverge.

All variables take benchmark values, with the important remark that all import tariffs now apply to the Netherlands.

Case 4 set-up: Tariff levels and endowments									(Table 3.9)
		NL	**DE**	**BE**	**FR**	**UK**	**IT**	**CN**	**JP**	**US**
Tariff good 0	**TX0**	10%	10%	10%	10%	10%	10%	9%	11%	6%
Tariff good 1	**TX1**	14%	14%	14%	14%	14%	14%	13%	9%	7%
Tariff good 2	**TX2**	5%	5%	5%	5%	5%	5%	6%	1%	5%
Tariff good 3	**TX3**	3%	3%	3%	3%	3%	3%	6%	4%	.2%
Tariff good 5	**TX5**	4%	4%	4%	4%	4%	4%	6%	6%	3%
Tariff good 6	**TX6**	9%	9%	9%	9%	9%	9%	8%	6%	9%
Tariff good 7	**TX7**	4%	4%	4%	4%	4%	4%	8%	5%	3%
Tariff good 8	**TX8**	6%	6%	6%	6%	6%	6%	10%	13%	5%
Tariff good 9	**TX9**	0%	0%	0%	0%	0%	0%	0%	0%	0%
Labor endowment	**(L)**	8	39	5	26	29	23	612	58	140
Capital endowment	**(K)**	17	67	11	58	39	44	286	109	275
Capital ratio		2.13	1.72	2.20	2.23	1.34	1.91	0.47	1.88	1.96
EU member state import tariffs only apply to external, non-EU, trading partners. The Netherlands is now considered to be a non-EU trading partner.										

4. Results

In this section, we will report the results that we obtain from each specific simulation. We list all welfare levels, price levels, production output and trade flows. Variations in

these endogenous variables help us determine how import tariffs affect the welfare levels and if Heckscher-Ohlin theorems hold.

4.1. Benchmark results

Our initial results give us the benchmark welfare levels, goods prices, production levels and trade flows. In the benchmark equilibrium we find the Netherlands to mainly produce and export capital-intensive good 2. We also find that the prices for all goods have equally converged in the EU-countries whom trade tariff-free amongst each other. The prices for the same goods, except for good 9, remain to differ for their non-EU counterparts. Factor prices have not converged along with traded goods prices.

Welfare levels								(Table 4.1)
NL	DE	BE	FR	UK	IT	CN	JP	US
21.45	77.40	11.91	56.34	60.68	61.15	946.26	136.78	287.44

Price levels									
	NL	DE	BE	FR	UK	IT	CN	JP	US
pGood 0	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.09	1.00
pGood 1	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.24	1.14
pGood 2	1.13	1.13	1.13	1.13	1.13	1.13	1.20	1.14	1.14
pGood 3	1.15	1.15	1.15	1.15	1.15	1.15	1.20	1.15	1.15
pGood 5	1.16	1.16	1.16	1.16	1.16	1.16	1.19	1.12	1.15
pGood 6	1.22	1.22	1.22	1.22	1.22	1.22	1.12	1.20	1.20
pGood 7	1.23	1.23	1.23	1.23	1.23	1.23	1.20	1.24	1.23
pGood 8	1.26	1.26	1.26	1.26	1.26	1.26	1.19	1.17	1.20
pGood 9	1.20	1. 20	1. 20	1. 20	1. 20	1. 20	1. 20	1. 20	1. 20
Labor	1.36	1.79	1.95	1.86	1.36	1.48	1.24	1.65	1.73
Capital	0.85	0.33	0.39	0.32	0.84	0.88	1.11	0.61	0.36

NL production output and NET exports									
	Output	to DE	to BE	to FR	to UK	to IT	to CN	to JP	to US
Good 0	0.00	-13.97	9.08	0.00	0.00	0.00	1.53	0.00	0.00

Good 1	9.87	2.26	-4.42	6.78	1.92	2.11	0.00	0.00	0.00
Good 2	56.11	6.54	6.44	6.45	-7.63	-5.73	41.10	6.05	0.00
Good 3	4.65	0.94	0.76	0.90	0.85	0.88	0.00	0.00	0.00
Good 5	0.00	0.10	0.05	0.23	-0.11	1.69	0.00	-3.92	0.00
Good 6	5.61	1.97	-0.76	1.26	2.82	-2.63	0.00	0.00	0.00
Good 7	0.00	1.82	-0.10	0.36	-4.03	1.15	0.00	0.00	0.00
Good 8	0.00	-0.13	-0.63	-0.62	0.03	-3.55	0.00	0.00	0.00
Good 9	0.00	-9.99	-2.57	-8.84	5.32	4.89	-60.04	10.85	5.02

4.2. Case 1: Unilateral tariff drop of a single good

The average tariff drop of 16% has led Dutch welfare to increase with 0.28%. Welfare levels of Germany, France, the United Kingdom, China, Japan and the United States of America have also risen. Dutch average production and exports of capital-intensive good have increased with 2% and 6% respectively. Average production and exports of labor-intensive goods have dropped with 68% and 2% respectively. The Netherlands has stopped producing good 6 itself, but now imports it from China and exports it to the rest of the world. Dutch production and exports of good 2 remain steady around the same levels. Price levels worldwide have decreased with 0.08% on average. The price of good 6 has now converged worldwide, with the price in China matching EU levels. Factor prices, as in the benchmark, have not converged alongside goods prices. Nevertheless, the wage rate in the Netherlands has dropped, whereas the capital rent has increased.

Welfare levels								(Table 4.2)
NL	**DE**	**BE**	**FR**	**UK**	**IT**	**CN**	**JP**	**US**
21.51	77.94	11.29	56.99	60.75	60.98	949.26	136.92	287.54

Price levels								
	NL	**DE**	**BE**	**FR**	**UK**	**IT**	**CN**	**JP**	**US**
pGood 0	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.09	1.00
pGood 1	1.13	1.13	1.13	1.13	1.13	1.13	1.14	1.24	1.14
pGood 2	1.13	1.13	1.13	1.13	1.13	1.13	1.20	1.14	1.14

pGood 3	1.15	1.15	1.15	1.15	1.15	1.15	1.20	1.15	1.15
pGood 5	1.16	1.16	1.16	1.16	1.16	1.16	1.19	1.12	1.15
pGood 6	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
pGood 7	1.21	1.21	1.21	1.21	1.21	1.21	1.20	1.24	1.23
pGood 8	1.21	1.21	1.21	1.21	1.21	1.21	1.20	1.17	1.19
pGood 9	1.20	1.20	1. 20	1. 20	1. 20	1. 20	1. 20	1. 20	1. 20
Labor	1.32	1.80	1.79	1.85	1.29	1.38	1.24	1.64	1.73
Capital	0.87	0.34	0.40	0.33	0.89	0.92	1.11	0.62	0.36

NL production output and NET exports								
	Output	**to DE**	**to BE**	**to FR**	**to UK**	**to IT**	**to CN**	**to JP**	**to US**
Good 0	0.00	-11.66	10.86	0.00	0.00	0.00	0.49	0.00	0.00
Good 1	0.00	0.65	-8.48	4.65	0.28	0.46	0.000	1.21	0.00
Good 2	56.51	6.73	6.63	3.04	-8.37	-7.22	48.17	4.58	0.00
Good 3	5.24	0.94	0.76	0.90	0.85	0.87	0.00	0.00	0.00
Good 5	0.00	0.16	-0.00	0.23	-0.05	1.69	0.00	-3.62	0.00
Good 6	0.00	9.89	9.12	9.47	10.39	11.08	-52.11	0.00	0.00
Good 7	0.00	1.94	-0.03	1.69	-1.68	-2.27	0.00	0.00	0.00
Good 8	0.00	-0.15	-0.79	0.65	0.25	-3.29	0.00	0.00	0.00
Good 9	4.90	-8.78	-1.30	-5.74	6.23	5.65	-58.76	12.48	5.93

4.3. Case 2: Unilateral tariff drop of all a country's goods

The welfare level in the Netherlands has increased with 0.56% as a result of dropping all its import tariffs. Welfare levels of all other countries, except for Belgium and the US, have also increased. All goods, except for good 3, are being imported and exported. Dutch average production and exports of capital-intensive goods has risen with 113% and 56% respectively. Average labor-intensive production and exports have dropped with 79% and 56% respectively. The average price level has decreased with 0.08% in the Netherlands. Wages all drop, except for in Germany. Whereas rent levels nearly all increase, except for in Belgium. The wage drop in the Netherlands is equal to that after dropping the import tariff of just one good. The increase in capital rent is slightly larger.

Once more, price levels of several different goods in China, Japan and the US converge towards their EU-partner countries.

Welfare levels								(Table 4.3)
NL	DE	BE	FR	UK	IT	CN	JP	US
21.57	78.13	11.34	57.13	60.80	61.26	950.38	137.15	287.24

Price levels								
	NL	DE	BE	FR	UK	IT	CN	JP	US
pGood 0	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.09	1.00
pGood 1	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.24	1.14
pGood 2	1.13	1.13	1.13	1.13	1.13	1.13	1.20	1.14	1.14
pGood 3	1.14	1.14	1.14	1.14	1.14	1.14	1.198	1.15	1.14
pGood 5	1.12	1.12	1.12	1.12	1.12	1.12	1.188	1.12	1.16
pGood 6	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.21
pGood 7	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.24	1.24
pGood 8	1.17	1.17	1.17	1.17	1.17	1.17	1.20	1.17	1.20
pGood 9	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Labor	1.32	1.80	1.85	1.83	1.30	1.35	1.24	1.63	1.73
Capital	0.88	0.34	0.38	0.35	0.89	0.95	1.11	0.63	0.36

NL production output and NET exports								
	Output	to DE	to BE	to FR	to UK	to IT	to CN	to JP	to US
Good 0	0.00	104.7	33.00	0.00	0.00	0.00	25.00	0.00	-163.0
Good 1	0.00	0.64	-5.52	3.88	0.29	0.48	0.00	0.00	0.00
Good 2	51.19	1.10	1.04	-10.20	-13.78	-13.65	43.03	0.00	0.00
Good 3	78.00	11.91	11.73	11.87	11.82	11.59	0.00	0.00	18.36
Good 5	0.00	12.71	12.52	12.62	12.47	14.77	17.80	-99.34	0.00
Good 6	0.00	4.10	1.82	4.35	3.96	0.94	-17.14	0.00	0.00
Good 7	0.00	11.02	9.03	13.46	10.92	9.58	-54.36	0.00	0.00
Good 8	0.00	2.31	1.74	1.79	1.84	1.82	0.00	-14.33	0.00
Good 9	3.27	-10.20	-2.85	-3.33	2.84	3.87	-60.15	13.13	-0.20

4.4. Case 3: Multilateral tariff drop

Table (4.4) gives us the benchmark results for a modeled economy with no European Customs Union. We must look from this table to our initial benchmark table (4.1) to see how our endogenous variables change when EU members perform a multilateral tariff drop.

Dutch welfare shows an increase of 0.66%, other countries do not all seem to benefit. France, China and Japan see their respective welfare levels slightly drop. Germany, Belgium, the UK, Italy and the United States of America have increased welfare. Remarkably Dutch trade has completely opened up, however decreasing with 5% on average. Good 2 is being exported mainly to labor-abundant China, as labor-intensive good 9 is being imported straight back. Capital-intensive production has increased with 4% on average, whereas average labor-intensive production had increased with 54%. Average price levels have risen with 8%. Even though all wages and rent levels have risen internationally, the wage level in the Netherlands has increased relative to the capital rent. Apart from factor inputs, all price levels of EU countries have converged towards the same value.

Welfare levels								(Table 4.4)
NL	DE	BE	FR	UK	IT	CN	JP	US
21.31	77.09	10.83	56.41	60.41	61.12	948.12	137.00	287.34

Price levels									
	NL	DE	BE	FR	UK	IT	CN	JP	US
pGood 0	1.00	0.92	0.92	0.909	1.00	1.00	0.99	0.99	0.91
pGood 1	1.07	1.16	1.02	1.049	1.09	1.07	1.04	1.12	1.04
pGood 2	1.03	1.07	1.03	1.037	1.03	1.03	1.09	1.04	1.04
pGood 3	1.04	1.07	1.07	1.073	1.06	1.04	1.09	1.05	1.04
pGood 5	1.06	1.06	1.06	1.059	1.06	1.06	1.08	1.02	1.05
pGood 6	1.11	1.14	1.08	1.124	1.12	1.09	1.09	1.10	1.10
pGood 7	1.12	1.13	1.09	1.133	1.11	1.09	1.09	1.13	1.12
pGood 8	1.11	1.13	1.12	1.126	1.13	1.09	1.09	1.06	1.09
pGood 9	1.09	1.09	1.09	1.088	1.09	1.09	1.09	1.09	1.09

Labor	1.22	1.63	1.65	1.692	1.21	1.20	1.12	1.50	1.58
Capital	0.78	0.30	0.31	0.290	0.78	0.86	1.01	0.56	0.33

NL production output and net exports

	Output	to DE	to BE	to FR	to UK	to IT	to CN	to JP	to US
Good 0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.62
Good 1	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 2	58.00	0.00	0.00	0.00	0.00	0.00	57.82	0.00	0.00
Good 3	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.86	0.00
Good 6	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 7	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 8	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 9	0.00	-7.99	-3.22	-5.50	5.68	4.33	-62.93	11.92	4.36

4.5. Case 4: Nexit

The welfare level in the Netherlands has dropped with 0.63% as a result of the Nexit. Welfare levels of France, the UK, Japan and the US also drop. Germany, Belgium, Italy and China have increased welfare levels. Average price levels of all goods have decreased with 8%, resembling the pre-EU benchmark from case 3. Dutch prices have diverged from EU prices. Wage rates and capital rent have both decreased in the Netherlands, all other countries share this drop. Dutch average production of capital-intensive goods decreases with 4%, average production of labor-intensive goods decreases with 35%. Average trade levels of capital and labor-intensive goods increase with 6% and 5% respectively. The wage level in the Netherlands has increased relative to the capital rent. Finally, Dutch goods prices have slightly diverged from the converged values of its former EU trading partners.

Welfare levels								(Table 4.5)
NL	**DE**	**BE**	**FR**	**UK**	**IT**	**CN**	**JP**	**US**
21.31	77.41	11.96	56.33	60.66	61.20	946.36	136.76	287.44

Price levels

	NL	DE	BE	FR	UK	IT	CN	JP	US
pGood 0	1.00	0.91	0.91	0.909	0.909	0.909	0.991	0.989	0.909
pGood 1	1.07	1.05	1.05	1.047	1.047	1.047	1.038	1.128	1.035
pGood 2	1.03	1.03	1.03	1.029	1.029	1.029	1.090	1.039	1.035
pGood 3	1.04	1.05	1.05	1.046	1.046	1.046	1.088	1.047	1.041
pGood 5	1.06	1.06	1.06	1.057	1.057	1.057	1.078	1.017	1.047
pGood 6	1.11	1.11	1.11	1.11	1.11	1.11	1.09	1.10	1.10
pGood 7	1.12	1.12	1.12	1.12	1.12	1.12	1.09	1.13	1.12
pGood 8	1.11	1.11	1.11	1.11	1.11	1.11	1.09	1.06	1.09
pGood 9	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Labor	1.22	1.63	1.77	1.70	1.23	1.35	1.13	1.50	1.57
Capital	0.78	0.30	0.36	0.29	0.77	0.79	1.01	0.56	0.33

NL production output and NET exports

	Output	to DE	to BE	to FR	to UK	to IT	to CN	to JP	to US
Good 0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.62
Good 1	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 2	58.01	0.00	0.00	0.00	0.00	0.00	47.74	10.08	0.00
Good 3	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.86	0.00
Good 6	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 7	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 8	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good 9	0.00	-9.78	-2.30	-8.19	5.54	5.13	-59.94	10.96	5.21

5. Discussion

In this section we discuss our reported case results. First of all, the benchmark equilibrium already confirms certain theoretical implications. Keeping in mind that the Netherlands is the third most capital abundant country in the modeled economy, we immediately find proof of the H-O theorem. Namely, Dutch production and trade mainly centers on good 2, which is the Netherlands' most capital intensive good in production.

On the other hand, neither in our benchmark equilibrium, nor in our unilateral simulations has factor price equalization materialized. It seems that indirect factor arbitrage, as described in aforementioned literature, is not able to fully take place. With a realistic tariff-structure in place, there is not enough free trade to implicitly equalize factor endowments. Another reason may be that our model simply isn't set up to accommodate such perfect market clearance. As most production functions require relatively more labor and all country endowments are biased towards capital, a perfectly clearing market is deemed impossible.

5.1. Unilateral tariff implications

One-sided tariff reform sees overall welfare increase for the Netherlands; most other countries enjoy the same effect. The increase in welfare is logically explained through the increase of specialization. Countries with comparative advantages focus production on particular goods, whilst trading freely. We find that the Stolper-Samuelson theorem holds in both our cases of unilateral tariff reform. Depending on which particular import tariffs is eliminated, countries undergo a trade-off between wages and capital rent values. For a country like the Netherlands, which produces mostly labor-intensive goods, a total repeal of import tariffs will see workers suffer relative to capital owners. As trade becomes more tariff-free, we spot converging prices in all liberated markets. The EU-member countries already had converging prices thanks to their tariff-free trade environment. Hence, we take a better look at the further removed markets of China, Japan and the US. Dutch elimination of the import tariff on good 6 showed prices to completely diverge in China and partially convergence in Japan and the US. Price levels also show to consistently decrease, as tariffs are removed. Here we reason that as more free trade is facilitated, specializing countries can produce goods at lower costs. Even though the production technologies differ, the production of good 6 in China is also labor intensive. As the import tariff for good 6 is dropped, we recognize the workings of the H-O theorem. The Netherlands stops producing good 6 and starts importing it from labor abundant China. In the meanwhile, Dutch production of capital-intensive good 2 has increased. As Dutch trade eliminates all its import tariffs, production and trade near completely focuses on good 2 and good 3. Good 3 requires

equal amounts of labor and capital, but its foremost intermediate input comes from good 2. Therefore, good 3 portrays similar behavior to good 2. At last, the unilateral abolishment of tariffs does not free up trade enough for factor price equalization to materialize.

5.2. Multilateral tariff implications

Multilateral tariff reform does not always benefit all countries involved. In this particular case the Dutch welfare and the overall average welfare of all countries does increase. Lots of trade channels have opened up, although total trade has dropped. It seems as though the tariff free environment mainly facilitates trade in intermediate goods, thus boosting production. Alongside the shifts in welfare, we find Stolper-Samuelson theorem to hold once more. Demand for Dutch capital intensive good 2 has relatively decreased at the hand of the new free trade zone. This has caused wage levels to increase with respect to the capital rent. Also, price levels converge amongst participating countries due to the increased amount of trade activities. Interestingly, the tariff reform has proven big enough to affect demand on a world level. All market prices are inflated due to this increased demand. It seems this effect has cancelled out the price lowering production cost minimization, which follows from increased specialization. It may be argued that a differently modeled economy, i.e. more non-EU countries included, would portray this effect to lesser extent. The H-O theorem holds as the Netherlands consistently produce capital intensive good 2, which is mainly exported to labor-abundant China. In return, China exports large numbers of its labor-intensive good 9 back the Netherlands. Lastly, we see that this multilateral tariff drop does not free up trade enough to induce complete implicit factor trade.

5.3. Nexit implications

As one might have expected, stepping out of the EU does indeed harm the Dutch welfare. Compared to our prior case of a multilateral agreement, we observe the exact opposite effects. Although overall trade is reported to increase, numerous trade channels have closed. Production and national welfare both drop, yet the Dutch welfare

level hasn't dropped as far as in the case 3 benchmark, implying the Dutch economy still benefits from the remaining European countries being in agreement. Demand for the main Dutch export product, good 2, falls as a result of newly set import tariffs. Again, the Stolper-Samuelson theorem is effective as wage rates increase relative to capital rent. If anything, the Nexit has benefitted the workers over the capital holders. Nonetheless, all prices diverge away from European values, for the lack of trade. It seems that decreased Dutch demand for imports had caused price levels to drop worldwide, once more reaching values comparable to the case 3 benchmark in table (4.4.1). Even though the Netherlands imposes tariffs that subsequently decrease the amount of international trade channels, such a comprehensive effect on world prices seems exaggerated. A possible explanation for this occurrence is that essentially the whole model economy is built around the Netherlands. As a result, the Dutch economy is deeply rooted in the world market, causing its actions to be magnified. Either way, more goods are being produced domestically as trade with European partners has completely stopped. Dutch-Chinese trade relations are still intact as both countries continue to export good 2 and good 9 to each other.

5.4. GAMS Model improvements

Our current general equilibrium model is capable of predicting 61% of trade flows, given the applied set of parameter values. The various simulations have highlighted some of its limitations, thus creating room for several improvements to be made which might benefit both the predictive accuracy and the inner dynamics of the model. First of all, by adding more countries to our model economy, we will be able to simulate increasing amounts of trade flows. At this point it remains so that, alongside their main activities, certain countries are exporting goods they shouldn't be. This is the case because certain other countries are missing from the model. Thus, more countries may result in more accurate predictions, as formerly excluded countries will level out product supply and demand. This suggested addition will not only create better predictions, it will also gradually lessen the magnified influence of the Netherlands in the model. Ideally, a composition of countries is reached in which each participating nation registers equal amounts of incoming and outgoing trade. Second, adding more goods to our model may

increase the extent to which policy advice can be given. In the second order SITC classification, our nine initial aggregated goods are split up into an attractive 80 subcategories. Along with the benefit of production demand and supply being more concentrated in our model, there would be a better chance of production functions having less of a bias towards capital. Third, intermediate usage of goods becomes more truthful if we extend our production functions. At this point, because production functions take a Cobb-Douglas format, an inflated share of input is often credited to the third and last intermediate good. But when all the utilized intermediate goods are added to the production function, intermediate demand is more realistically simulated. Finally, the endowment values for labor and capital have been determined such that they are in proportion and production outputs are readily interpretable. The addition of the technological deflator for capital endowment does no harm when it comes to the primary predictions of trade, because relative differences between the capital endowments of countries have remained the same. On the other hand, the determination of the technological deflator may be held under scrutiny, as the current method of scaling both factors into proportion seems relatively arbitrary. A more theoretical approach to the rescaling of labor and capital values would benefit its validity.

6. Conclusion

The aim of this paper was to analyze trade flows and welfare effects of tariff reform upon the Dutch economy. We used GAMS computational software to construct an extended version of the Heckscher-Ohlin general equilibrium mathematical model of international trade. The extended model was built to include nine countries and nine integrated goods, the two factors of input consisting of labor and capital. The assumption of identical production technologies per country was let go, as production functions were individually modeled after real input-output table performance. The presence of tariffs also devaluated the assumption of goods prices being the same everywhere.

Resulting simulations of both unilateral and multilateral tariff reform have shown Dutch welfare to consistently increase as import tariffs are removed. When we simulated a

Dutch exit from the European Union, we found the same trade effects to materialize in reverse. These results are driven by increasing specialization, seeing countries produce goods in which they have a comparative advantage. Throughout these simulations, trade flows have also generally followed patterns as predicted in Heckscher-Ohlin theory, equally driven by comparative advantage. Several additions to the GAMS model have been suggested in order to better its accuracy and inner dynamics. The main recommendations are to add more countries, more goods and extend the production functions. These additions will help better replicate real trade flows and solve for problems with magnified trade effects.

Apart from incidental occurrences, elimination of a country's import tariffs benefits its national welfare and boosts its level of international trade. Future expansion of this model could strengthen this conclusion and incidentally simulate more complex cases of tariff reform.

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8. Appendix

8.1. Additional calculations and data sourcing

8.1.1. Working population and capital stock

Endowment calculations			(Table 7.1)
Labor	Total employment	Divided through 1000000	
Belgium	4911279	**5**	
France	26254520	**26**	
Germany	38738000	**39**	
Italy	22526850	**23**	
Japan	57592313	**58**	
Netherlands	8401700	**8**	
United Kingdom	29109710	**29**	
United States	140498700	**140**	
China	611565896	**612**	
Capital	Consumption of fixed capital	Divided through 1000000	Divided through 10000
Belgium	109772088742	109772	**11**
France	579691839735	579692	**58**
Germany	669790410596	669790	**67**
Italy	435983253004	435983	**44**
Japan	1088086352343	1088086	**109**
Netherlands	170633705960	170634	**17**
United Kingdom	394174709518	394175	**39**
United States	2753444448000	2753444	**275**
China	2856758474513	2856758	**286**

8.2. NL input-output matrices

8.2.1. Real input output matrix[10], year 2010.

Input-output matrix; real NL (in US dollars, millions)

Markets	X0	X1	X2	X3	X5	X6	X7	X8	X9	W	xb**	CONS	Net Exports
pX0	**42825**	-15374	-43	-16	-139	-223	-34	-54	-2146	-6228	-11353		7214.9
pX1	-3498	**94531**	-23	-63	-881	-296	-98	-113	-6838	-28278	-31421		23022
pX2	-53	-98	**31153**	-20432	-1420	-1160	-15	-46	-5857	-77	-2527.7		-532.9
pX3	-615	-182	-187	**56277**	-6661	-386	-96	-242	-10172	-7545	-18354		11837
pX5	-1211	-1128	-87	-3575	**25643**	-5029	-575	-945	-9720	-13035	18879		9216.8
pX6	-424	-3241	-244	-1762	-1742	**93595**	-5973	-3831	-30121	-19088	-34822		-7653
pX7	-128	-491	-200	-430	-532	-1354	**95652**	-1653	-8229	-8623	-74510		-498.4
pX8	-556	-743	-238	-357	-646	-1291	-3920	**52501**	-13393	-11888	-27378		-7909
pX9	-11934	-24879	-5443	-7428	-18101	-25269	-12790	-16163	**433053**	-423263	123491		11274
pW												-123491	
pL	-4009	-7802	-930	-855	-9385	-9900	-4967	-321	-229139		182093	85215	
pK	-4975	-2404	-2139	-749	-2366	-3906	-1381	-2451	-99694		81789	38276	
pa*	-15422	-38189	-21619	-20610	16230	-44781	-65803	-26682	-17744				
	0	0	0	0	0	0	0	0	0	0		0	

*this term balances out the simplified display of the real NL input-output matrix, inherently accounting for taxes less subsidies, extra value added to goods and net operating surplus.

**this term balances out the simplified display of the real NL input-output matrix, inherently accounting for taxes less subsidies, gross fixed capital formation, changes in inventories, incidental cross-border imports and cross-border exports.

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[10] Datset input-output tables listed at http://stats.oecd.org/, retrieved on 18 January 2016

8.2.2. Simulated input output matrix.

(Table 3.4)

NL input-output matrix; trading equilibrium

Markets	Price	X0NL	X1NL	X2NL	X3NL	X5NL	X6NL	X7NL	X8NL	X9NL	WNL	CONS	
				Production Sectors								Consumers	
pX0NL	**1.00**	**0.00**	-3.06								-0.31		*-3.37*
pX1NL	**1.15**	0.00	**11.36**								-1.40		*8.66*
pX2NL	**1.13**			**63.51**	-2.97						0.00		*53.48*
pX3NL	**1.15**				**5.34**	0.00				0.00	-0.37		*4.33*
pX5NL	**1.16**	0.00			-1.07	**0.00**	-0.57				-0.64		*-1.96*
pX6NL	**1.22**		-1.31	-1.35		0.00	**6.86**	0.00	0.00	0.00	-0.94		*2.66*
pX7NL	**1.23**						-0.57	**0.00**	0.00		-0.43		*-0.81*
pX8NL	**1.23**			-5.41				0.00	**0.00**	0.00	-0.59		*-4.89*
pX9NL	**1.20**	0.00	-4.81	-36.49	-1.07	0.00	-3.00	0.00	0.00	**0.00**	-20.90		*-55.40*
pWNL	**1.19**										**25.58**	**-25.58**	
pLNL	**1.36**	0.00	-1.75	-6.76	-0.12	0.00	-2.29	0.00	0.00	0.00		10.91	
pKNL	**0.85**	0.00	-0.44	-13.51	-0.12	0.00	-0.43	0.00	0.00	0.00		14.50	
Tariff revenue												**0.18**	
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.01	

8.3. Benchmark model strength comparison

Correct predictions have been highlighted. 61% of all real trade directions are correctly predicted in the GAMS benchmark equilibrium.

Calculation of benchmark predictive power									(Table 7.4.1)
REAL DATA	**GOOD 0**	**GOOD 1**	**GOOD 2**	**GOOD 3**	**GOOD 5**	**GOOD 6**	**GOOD 7**	**GOOD 8**	**GOOD 9**
NL NET EXPO	7215	23022	-533	11837	9217	-7653	-498	-7909	11274
DE NET EXPO	-11446	15244	-51378	-13553	42035	36187	207950	25880	-99929
BE NET EXPO	-1743	2470	-7901	5798	9332	5923	-660	-6978	-6057
FR NET EXPO	4967	-966	-37870	-17324	8950	-31455	13952	-19129	-26752
UK NET EXPO	-7215	-21512	-5193	-5590	6567	-44595	-12133	-42221	47622
IT NET EXPO	-6546	-5863	-54557	5208	-13038	20633	39302	-9258	-55087
CN NET EXPO	-26563	-4437	-179466	-10661	-39148	172570	46226	229368	-12857
JP NET EXPO	-17083	-34428	-146485	-23258	12250	3232	185460	51108	23309
US NET EXPO	24121	-7492	-184824	-344	-2784	-124907	-42306	-209701	-115170
GAMS DATA	**GOOD 0**	**GOOD 1**	**GOOD 2**	**GOOD 3**	**GOOD 5**	**GOOD 6**	**GOOD 7**	**GOOD 8**	**GOOD 9**
NL NET EXPO	-3.366	8.656	53.482	4.329	-1.963	2.661	-0.812	-4.892	-55.366
DE NET EXPO	-0.980	-4.890	-0.313	-1.308	-2.085	-9.173	-11.722	-4.142	34.627
BE NET EXPO	-7.550	35.145	-0.003	-0.254	-1.202	7.244	-0.194	-1.115	0.000
FR NET EXPO	23.396	-32.032	-0.004	-1.055	-2.873	-4.874	-2.944	-1.176	24.150
UK NET EXPO	-0.906	-2.887	109.862	-0.790	-0.727	-14.286	23.382	-5.073	-103.236
IT NET EXPO	-1.432	-3.992	95.460	-0.922	-13.205	18.427	-7.710	16.397	-99.414
CN NET EXPO	-173.954	0.000	-299.712	0.000	-137.817	0.000	6.457	0.000	484.989
JP NET EXPO	0.000	-8.816	-28.771	0.000	201.765	0.000	0.000	0.000	-152.986
US NET EXPO	164.793	8.816	0.000	0.000	-41.893	0.000	-6.457	0.000	-100.502

Amount of predicted trade instances:	67
Correctly predicted trade directions:	41
Percentage correct predictions:	61%

8.4. GAMS model code

```
$TITLE  Basic model

$ONTEXT

THIS CODE CONTAINS A HECKSCHER-OHLIN 9x9x2 GENERAL
EQUILIBRIUM MODEL WITH
INTEGRATED GOODS. INCLUDED COUNTRIES ARE THE
NETHERLANDS, GERMANY, BELGIUM,
FRANCE, UNITED KINGDOM, ITALY, CHINA, JAPAN, AND THE UNITED
STATES OF AMERICA

$OFFTEXT

PARAMETERS

* PARAMETER NAMES AND DESCRIPTIONS

alphaL0_NL     labour share parameter for good X0NL
alphaK0_NL     capital share parameter for good X0NL
alpha90_NL     exponent for (intermediate) good X9NL in good
X0NL
alpha10_NL     exponent for (intermediate) good X1NL in good
X0NL
alphaL1_NL     labour share parameter for good X1NL
alphaK1_NL     capital share parameter for good X1NL
alpha91_NL     labour for (intermediate) good X9NL in good X1NL
alpha01_NL     exponent for (intermediate) good X0NL in good
X1NL
alphaL2_NL     labour share parameter for good X2NL
alphaK2_NL     capital share parameter for good X2NL
alpha92_NL     exponent for (intermediate) good X9NL in good
X2NL
alpha62_NL     exponent for (intermediate) good X6NL in good
X2NL
alphaL3_NL     labour share parameter for good X3NL
alphaK3_NL     capital share parameter for good X3NL
alpha23_NL     exponent for (intermediate) good X2NL in good
X3NL
alpha93_NL     exponent for (intermediate) good X9NL in good
X3NL
alphaL5_NL     labour share parameter for good X5NL
alphaK5_NL     capital share parameter for good X5NL
alpha95_NL     exponent for (intermediate) good X9NL in good
X5NL
alpha35_NL     exponent for (intermediate) good X3NL in good
X5NL
alphaL6_NL     labour share parameter for good X6NL
alphaK6_NL     capital share parameter for good X6NL
alpha96_NL     exponent for (intermediate) good X9NL in good
X6NL
alpha56_NL     exponent for (intermediate) good X5NL in good
X6NL
alphaL7_NL     labour share parameter for good X7NL
alphaK7_NL     capital share parameter for good X7NL
alpha97_NL     exponent for (intermediate) good X9NL in good
X7NL
alpha67_NL     exponent for (intermediate) good X6NL in good
X7NL
alphaL8_NL     labour share parameter for good X8NL

alphaK8_NL     capital share parameter for good X8NL
alpha98_NL     exponent for (intermediate) good X9NL in good
X8NL
alpha68_NL     exponent for (intermediate) good X6NL in good
X8NL
alphaL9_NL     labour share parameter for good X9NL
alphaK9_NL     capital share parameter for good X9NL
alpha69_NL     exponent for (intermediate) good X6NL in good
X9NL
alpha89_NL     exponent for (intermediate) good X8NL in good
X9NL
phi0NL         exponent for consumption share of good X0NL
phi1NL         exponent for consumption share of good X1NL
phi2NL         exponent for consumption share of good X2NL
phi3NL         exponent for consumption share of good X3NL
phi5NL         exponent for consumption share of good X5NL
phi6NL         exponent for consumption share of good X6NL
phi7NL         exponent for consumption share of good X7NL
phi8NL         exponent for consumption share of good X8NL
LNL            labor endowment
KNL            capital endowment
TX0NL          NL import tariff on good 0
TX1NL          NL import tariff on good 1
TX2NL          NL import tariff on good 2
TX3NL          NL import tariff on good 3
TX5NL          NL import tariff on good 5
TX6NL          NL import tariff on good 6
TX7NL          NL import tariff on good 7
TX8NL          NL import tariff on good 8
TX9NL          NL import tariff on good 9

alphaL0_DE     labour share parameter for good X0DE
alphaK0_DE     capital share parameter for good X0DE
alpha90_DE     exponent for (intermediate) good X9DE in good
X0DE
alpha10_DE     exponent for (intermediate) good X1DE in good
X0DE
alphaL1_DE     labour share parameter for good X1DE
alphaK1_DE     capital share parameter for good X1DE
alpha91_DE     labour for (intermediate) good X9DE in good X1DE
alpha01_DE     exponent for (intermediate) good X0DE in good
X1DE
alphaL2_DE     labour share parameter for good X2DE
alphaK2_DE     capital share parameter for good X2DE
alpha92_DE     exponent for (intermediate) good X9DE in good
X2DE
alpha62_DE     exponent for (intermediate) good X6DE in good
X2DE
alphaL3_DE     labour share parameter for good X3DE
alphaK3_DE     capital share parameter for good X3DE
alpha93_DE     exponent for (intermediate) good X9DE in good
X3DE
alpha23_DE     exponent for (intermediate) good X2DE in good
X3DE
alphaL5_DE     labour share parameter for good X5DE
alphaK5_DE     capital share parameter for good X5DE
alpha95_DE     exponent for (intermediate) good X9DE in good
X5DE
alpha65_DE     exponent for (intermediate) good X6DE in good
X5DE
alphaL6_DE     labour share parameter for good X6DE
alphaK6_DE     capital share parameter for good X6DE
```

Term	Description
alpha96_DE	exponent for (intermediate) good X9DE in good X6DE
alpha56_DE	exponent for (intermediate) good X5DE in good X6DE
alphaL7_DE	labour share parameter for good X7DE
alphaK7_DE	capital share parameter for good X7DE
alpha97_DE	exponent for (intermediate) good X9DE in good X7DE
alpha67_DE	exponent for (intermediate) good X6DE in good X7DE
alphaL8_DE	labour share parameter for good X8DE
alphaK8_DE	capital share parameter for good X8DE
alpha98_DE	exponent for (intermediate) good X9DE in good X8DE
alpha68_DE	exponent for (intermediate) good X6DE in good X8DE
alphaL9_DE	labour share parameter for good X9DE
alphaK9_DE	capital share parameter for good X9DE
alpha69_DE	exponent for (intermediate) good X6DE in good X9DE
alpha89_DE	exponent for (intermediate) good X8DE in good X9DE
phi0DE	exponent for consumption share of good X0DE
phi1DE	exponent for consumption share of good X1DE
phi2DE	exponent for consumption share of good X2DE
phi3DE	exponent for consumption share of good X3DE
phi5DE	exponent for consumption share of good X5DE
phi6DE	exponent for consumption share of good X6DE
phi7DE	exponent for consumption share of good X7DE
phi8DE	exponent for consumption share of good X8DE
LDE	labor endowment
KDE	capital endowment
TX0DE	DE import tariff on good 0
TX1DE	DE import tariff on good 1
TX2DE	DE import tariff on good 2
TX3DE	DE import tariff on good 3
TX5DE	DE import tariff on good 5
TX6DE	DE import tariff on good 6
TX7DE	DE import tariff on good 7
TX8DE	DE import tariff on good 8
TX9DE	DE import tariff on good 9
alphaL0_BE	labour share parameter for good X0BE
alphaK0_BE	capital share parameter for good X0BE
alpha90_BE	exponent for (intermediate) good X9BE in good X0BE
alpha10_BE	exponent for (intermediate) good X1BE in good X0BE
alphaL1_BE	labour share parameter for good X1BE
alphaK1_BE	capital share parameter for good X1BE
alpha91_BE	labour for (intermediate) good X9BE in good X1BE
alpha01_BE	exponent for (intermediate) good X0BE in good X1BE
alphaL2_BE	labour share parameter for good X2BE
alphaK2_BE	capital share parameter for good X2BE
alpha92_BE	exponent for (intermediate) good X9BE in good X2BE
alpha82_BE	exponent for (intermediate) good X8BE in good X2BE
alphaL3_BE	labour share parameter for good X3BE
alphaK3_BE	capital share parameter for good X3BE
alpha93_BE	exponent for (intermediate) good X9BE in good X3BE
alpha23_BE	exponent for (intermediate) good X2BE in good X3BE
alphaL5_BE	labour share parameter for good X5BE
alphaK5_BE	capital share parameter for good X5BE
alpha95_BE	exponent for (intermediate) good X9BE in good X5BE
alpha35_BE	exponent for (intermediate) good X3BE in good X5BE
alphaL6_BE	labour share parameter for good X6BE
alphaK6_BE	capital share parameter for good X6BE
alpha96_BE	exponent for (intermediate) good X9BE in good X6BE
alpha56_BE	exponent for (intermediate) good X5BE in good X6BE
alphaL7_BE	labour share parameter for good X7BE
alphaK7_BE	capital share parameter for good X7BE
alpha97_BE	exponent for (intermediate) good X9BE in good X7BE
alpha67_BE	exponent for (intermediate) good X6BE in good X7BE
alphaL8_BE	labour share parameter for good X8BE
alphaK8_BE	capital share parameter for good X8BE
alpha98_BE	exponent for (intermediate) good X9BE in good X8BE
alpha68_BE	exponent for (intermediate) good X6BE in good X8BE
alphaL9_BE	labour share parameter for good X9BE
alphaK9_BE	capital share parameter for good X9BE
alpha69_BE	exponent for (intermediate) good X6BE in good X9BE
alpha59_BE	exponent for (intermediate) good X5BE in good X9BE
phi0BE	exponent for consumption share of good X0BE
phi1BE	exponent for consumption share of good X1BE
phi2BE	exponent for consumption share of good X2BE
phi3BE	exponent for consumption share of good X3BE
phi5BE	exponent for consumption share of good X5BE
phi6BE	exponent for consumption share of good X6BE
phi7BE	exponent for consumption share of good X7BE
phi8BE	exponent for consumption share of good X8BE
LBE	labor endowment
KBE	capital endowment
TX0BE	BE import tariff on good 0
TX1BE	BE import tariff on good 1
TX2BE	BE import tariff on good 2
TX3BE	BE import tariff on good 3
TX5BE	BE import tariff on good 5
TX6BE	BE import tariff on good 6
TX7BE	BE import tariff on good 7
TX8BE	BE import tariff on good 8
TX9BE	BE import tariff on good 9
alphaL0_FR	labour share parameter for good X0FR
alphaK0_FR	capital share parameter for good X0FR
alpha90_FR	exponent for (intermediate) good X9FR in good X0FR
alpha50_FR	exponent for (intermediate) good X5FR in good X0FR
alphaL1_FR	labour share parameter for good X1FR
alphaK1_FR	capital share parameter for good X1FR
alpha91_FR	labour for (intermediate) good X9FR in good X1FR
alpha01_FR	exponent for (intermediate) good X0FR in good X1FR

alphaL2_FR	labour share parameter for good X2FR	alphaK0_UK	capital share parameter for good X0UK
alphaK2_FR	capital share parameter for good X2FR	alpha90_UK	exponent for (intermediate) good X9UK in good X0UK
alpha92_FR	exponent for (intermediate) good X9FR in good X2FR	alpha10_UK	exponent for (intermediate) good X1UK in good X0UK
alpha62_FR	exponent for (intermediate) good X6FR in good X2FR	alphaL1_UK	labour share parameter for good X1UK
alphaL3_FR	labour share parameter for good X3FR	alphaK1_UK	capital share parameter for good X1UK
alphaK3_FR	capital share parameter for good X3FR	alpha91_UK	labour for (intermediate) good X9UK in good X1UK
alpha23_FR	exponent for (intermediate) good X2FR in good X3FR	alpha01_UK	exponent for (intermediate) good X0UK in good X1UK
alpha93_FR	exponent for (intermediate) good X9FR in good X3FR	alphaL2_UK	labour share parameter for good X2UK
alphaL5_FR	labour share parameter for good X5FR	alphaK2_UK	capital share parameter for good X2UK
alphaK5_FR	capital share parameter for good X5FR	alpha92_UK	exponent for (intermediate) good X9UK in good X2UK
alpha95_FR	exponent for (intermediate) good X9FR in good X5FR	alpha62_UK	exponent for (intermediate) good X6UK in good X2UK
alpha65_FR	exponent for (intermediate) good X6FR in good X5FR	alphaL3_UK	labour share parameter for good X3UK
alphaL6_FR	labour share parameter for good X6FR	alphaK3_UK	capital share parameter for good X3UK
alphaK6_FR	capital share parameter for good X6FR	alpha23_UK	exponent for (intermediate) good X2UK in good X3UK
alpha96_FR	exponent for (intermediate) good X9FR in good X6FR	alpha93_UK	exponent for (intermediate) good X9UK in good X3UK
alpha56_FR	exponent for (intermediate) good X5FR in good X6FR	alphaL5_UK	labour share parameter for good X5UK
alphaL7_FR	labour share parameter for good X7FR	alphaK5_UK	capital share parameter for good X5UK
alphaK7_FR	capital share parameter for good X7FR	alpha95_UK	exponent for (intermediate) good X9UK in good X5UK
alpha97_FR	exponent for (intermediate) good X9FR in good X7FR	alpha65_UK	exponent for (intermediate) good X6UK in good X5UK
alpha67_FR	exponent for (intermediate) good X6FR in good X7FR	alphaL6_UK	labour share parameter for good X6UK
alphaL8_FR	labour share parameter for good X8FR	alphaK6_UK	capital share parameter for good X6UK
alphaK8_FR	capital share parameter for good X8FR	alpha96_UK	exponent for (intermediate) good X9UK in good X6UK
alpha98_FR	exponent for (intermediate) good X9FR in good X8FR	alpha56_UK	exponent for (intermediate) good X5UK in good X6UK
alpha68_FR	exponent for (intermediate) good X6FR in good X8FR	alphaL7_UK	labour share parameter for good X7UK
alphaL9_FR	labour share parameter for good X9FR	alphaK7_UK	capital share parameter for good X7UK
alphaK9_FR	capital share parameter for good X9FR	alpha97_UK	exponent for (intermediate) good X9UK in good X7UK
alpha69_FR	exponent for (intermediate) good X6FR in good X9FR	alpha67_UK	exponent for (intermediate) good X6UK in good X7UK
alpha79_FR	exponent for (intermediate) good X7FR in good X9FR	alphaL8_UK	labour share parameter for good X8UK
phi0FR	exponent for consumption share of good X0FR	alphaK8_UK	capital share parameter for good X8UK
phi1FR	exponent for consumption share of good X1FR	alpha98_UK	exponent for (intermediate) good X9UK in good X8UK
phi2FR	exponent for consumption share of good X2FR	alpha68_UK	exponent for (intermediate) good X6UK in good X8UK
phi3FR	exponent for consumption share of good X3FR	alphaL9_UK	labour share parameter for good X9UK
phi5FR	exponent for consumption share of good X5FR	alphaK9_UK	capital share parameter for good X9UK
phi6FR	exponent for consumption share of good X6FR	alpha69_UK	exponent for (intermediate) good X6UK in good X9UK
phi7FR	exponent for consumption share of good X7FR	alpha89_UK	exponent for (intermediate) good X8UK in good X9UK
phi8FR	exponent for consumption share of good X8FR		
LFR	labor endowment	phi0UK	exponent for consumption share of good X0UK
KFR	capital endowment	phi1UK	exponent for consumption share of good X1UK
TX0FR	FR import tariff on good 0	phi2UK	exponent for consumption share of good X2UK
TX1FR	FR import tariff on good 1	phi3UK	exponent for consumption share of good X3UK
TX2FR	FR import tariff on good 2	phi5UK	exponent for consumption share of good X5UK
TX3FR	FR import tariff on good 3	phi6UK	exponent for consumption share of good X6UK
TX5FR	FR import tariff on good 5	phi7UK	exponent for consumption share of good X7UK
TX6FR	FR import tariff on good 6	phi8UK	exponent for consumption share of good X8UK
TX7FR	FR import tariff on good 7	LUK	labor endowment
TX8FR	FR import tariff on good 8	KUK	capital endowment
TX9FR	FR import tariff on good 9	TX0UK	UK import tariff on good 0
alphaL0_UK	labour share parameter for good X0UK		

TX1UK   UK import tariff on good 1
TX2UK   UK import tariff on good 2
TX3UK   UK import tariff on good 3
TX5UK   UK import tariff on good 5
TX6UK   UK import tariff on good 6
TX7UK   UK import tariff on good 7
TX8UK   UK import tariff on good 8
TX9UK   UK import tariff on good 9

alphaL0_IT   labour share parameter for good X0IT
alphaK0_IT   capital share parameter for good X0IT
alpha90_IT   exponent for (intermediate) good X9IT in good X0IT
alpha50_IT   exponent for (intermediate) good X5IT in good X0IT
alphaL1_IT   labour share parameter for good X1IT
alphaK1_IT   capital share parameter for good X1IT
alpha91_IT   labour for (intermediate) good X9IT in good X1IT
alpha01_IT   exponent for (intermediate) good X0IT in good X1IT
alphaL2_IT   labour share parameter for good X2IT
alphaK2_IT   capital share parameter for good X2IT
alpha92_IT   exponent for (intermediate) good X9IT in good X2IT
alpha62_IT   exponent for (intermediate) good X6IT in good X2IT
alphaL3_IT   labour share parameter for good X3IT
alphaK3_IT   capital share parameter for good X3IT
alpha23_IT   exponent for (intermediate) good X2IT in good X3IT
alpha93_IT   exponent for (intermediate) good X9IT in good X3IT
alphaL5_IT   labour share parameter for good X5IT
alphaK5_IT   capital share parameter for good X5IT
alpha95_IT   exponent for (intermediate) good X9IT in good X5IT
alpha65_IT   exponent for (intermediate) good X6IT in good X5IT
alphaL6_IT   labour share parameter for good X6IT
alphaK6_IT   capital share parameter for good X6IT
alpha96_IT   exponent for (intermediate) good X9IT in good X6IT
alpha56_IT   exponent for (intermediate) good X5IT in good X6IT
alphaL7_IT   labour share parameter for good X7IT
alphaK7_IT   capital share parameter for good X7IT
alpha97_IT   exponent for (intermediate) good X9IT in good X7IT
alpha67_IT   exponent for (intermediate) good X6IT in good X7IT
alphaL8_IT   labour share parameter for good X8IT
alphaK8_IT   capital share parameter for good X8IT
alpha98_IT   exponent for (intermediate) good X9IT in good X8IT
alpha68_IT   exponent for (intermediate) good X6IT in good X8IT
alphaL9_IT   labour share parameter for good X9IT
alphaK9_IT   capital share parameter for good X9IT
alpha69_IT   exponent for (intermediate) good X6IT in good X9IT
alpha89_IT   exponent for (intermediate) good X8IT in good X9IT
phi0IT   exponent for consumption share of good X0IT
phi1IT   exponent for consumption share of good X1IT
phi2IT   exponent for consumption share of good X2IT
phi3IT   exponent for consumption share of good X3IT
phi5IT   exponent for consumption share of good X5IT
phi6IT   exponent for consumption share of good X6IT
phi7IT   exponent for consumption share of good X7IT
phi8IT   exponent for consumption share of good X8IT
LIT   labor endowment
KIT   capital endowment
TX0IT   IT import tariff on good 0
TX1IT   IT import tariff on good 1
TX2IT   IT import tariff on good 2
TX3IT   IT import tariff on good 3
TX5IT   IT import tariff on good 5
TX6IT   IT import tariff on good 6
TX7IT   IT import tariff on good 7
TX8IT   IT import tariff on good 8

TX9IT   IT import tariff on good 9

alphaL0_CN   labour share parameter for good X0CN
alphaK0_CN   capital share parameter for good X0CN
alpha10_CN   exponent for (intermediate) good X9CN in good X0CN
alpha90_CN   exponent for (intermediate) good X1CN in good X0CN
alphaL1_CN   labour share parameter for good X1CN
alphaK1_CN   capital share parameter for good X1CN
alpha01_CN   labour for (intermediate) good X9CN in good X1CN
alpha91_CN   exponent for (intermediate) good X0CN in good X1CN
alphaL2_CN   labour share parameter for good X2CN
alphaK2_CN   capital share parameter for good X2CN
alpha92_CN   exponent for (intermediate) good X9CN in good X2CN
alpha62_CN   exponent for (intermediate) good X6CN in good X2CN
alphaL3_CN   labour share parameter for good X3CN
alphaK3_CN   capital share parameter for good X3CN
alpha23_CN   exponent for (intermediate) good X2CN in good X3CN
alpha93_CN   exponent for (intermediate) good X9CN in good X3CN
alphaL5_CN   labour share parameter for good X5CN
alphaK5_CN   capital share parameter for good X5CN
alpha95_CN   exponent for (intermediate) good X9CN in good X5CN
alpha25_CN   exponent for (intermediate) good X3CN in good X5CN
alphaL6_CN   labour share parameter for good X6CN
alphaK6_CN   capital share parameter for good X6CN
alpha96_CN   exponent for (intermediate) good X9CN in good X6CN
alpha56_CN   exponent for (intermediate) good X5CN in good X6CN
alphaL7_CN   labour share parameter for good X7CN
alphaK7_CN   capital share parameter for good X7CN
alpha67_CN   exponent for (intermediate) good X9CN in good X7CN
alpha97_CN   exponent for (intermediate) good X6CN in good X7CN
alphaL8_CN   labour share parameter for good X8CN
alphaK8_CN   capital share parameter for good X8CN
alpha68_CN   exponent for (intermediate) good X9CN in good X8CN
alpha98_CN   exponent for (intermediate) good X6CN in good X8CN
alphaL9_CN   labour share parameter for good X9CN
alphaK9_CN   capital share parameter for good X9CN
alpha69_CN   exponent for (intermediate) good X6CN in good X9CN
alpha89_CN   exponent for (intermediate) good X8CN in good X9CN
phi0CN   exponent for consumption share of good X0CN
phi1CN   exponent for consumption share of good X1CN
phi2CN   exponent for consumption share of good X2CN
phi3CN   exponent for consumption share of good X3CN
phi5CN   exponent for consumption share of good X5CN
phi6CN   exponent for consumption share of good X6CN
phi7CN   exponent for consumption share of good X7CN
phi8CN   exponent for consumption share of good X8CN

LCN	labor endowment	
KCN	capital endowment	
TX0CN	CN import tariff on good 0	
TX1CN	CN import tariff on good 1	
TX2CN	CN import tariff on good 2	
TX3CN	CN import tariff on good 3	
TX5CN	CN import tariff on good 5	
TX6CN	CN import tariff on good 6	
TX7CN	CN import tariff on good 7	
TX8CN	CN import tariff on good 8	
TX9CN	CN import tariff on good 9	
alphaL0_JP	labour share parameter for good X0JP	
alphaK0_JP	capital share parameter for good X0JP	
alpha90_JP	exponent for (intermediate) good X9JP in good X0JP	
alpha50_JP	exponent for (intermediate) good X5JP in good X0JP	
alphaL1_JP	labour share parameter for good X1JP	
alphaK1_JP	capital share parameter for good X1JP	
alpha91_JP	labour for (intermediate) good X9JP in good X1JP	
alpha01_JP	exponent for (intermediate) good X0JP in good X1JP	
alphaL2_JP	labour share parameter for good X2JP	
alphaK2_JP	capital share parameter for good X2JP	
alpha92_JP	exponent for (intermediate) good X9JP in good X2JP	
alpha32_JP	exponent for (intermediate) good X3JP in good X2JP	
alphaL3_JP	labour share parameter for good X3JP	
alphaK3_JP	capital share parameter for good X3JP	
alpha23_JP	exponent for (intermediate) good X2JP in good X3JP	
alpha93_JP	exponent for (intermediate) good X9JP in good X3JP	
alphaL5_JP	labour share parameter for good X5JP	
alphaK5_JP	capital share parameter for good X5JP	
alpha95_JP	exponent for (intermediate) good X9JP in good X5JP	
alpha35_JP	exponent for (intermediate) good X3JP in good X5JP	
alphaL6_JP	labour share parameter for good X6JP	
alphaK6_JP	capital share parameter for good X6JP	
alpha96_JP	exponent for (intermediate) good X9JP in good X6JP	
alpha56_JP	exponent for (intermediate) good X5JP in good X6JP	
alphaL7_JP	labour share parameter for good X7JP	
alphaK7_JP	capital share parameter for good X7JP	
alpha97_JP	exponent for (intermediate) good X9JP in good X7JP	
alpha67_JP	exponent for (intermediate) good X6JP in good X7JP	
alphaL8_JP	labour share parameter for good X8JP	
alphaK8_JP	capital share parameter for good X8JP	
alpha98_JP	exponent for (intermediate) good X9JP in good X8JP	
alpha68_JP	exponent for (intermediate) good X6JP in good X8JP	
alphaL9_JP	labour share parameter for good X9JP	
alphaK9_JP	capital share parameter for good X9JP	
alpha69_JP	exponent for (intermediate) good X6JP in good X9JP	
alpha39_JP	exponent for (intermediate) good X3JP in good X9JP	
phi0JP	exponent for consumption share of good X0JP	
phi1JP	exponent for consumption share of good X1JP	
phi2JP	exponent for consumption share of good X2JP	
phi3JP	exponent for consumption share of good X3JP	
phi5JP	exponent for consumption share of good X5JP	
phi6JP	exponent for consumption share of good X6JP	
phi7JP	exponent for consumption share of good X7JP	
phi8JP	exponent for consumption share of good X8JP	
LJP	labor endowment	
KJP	capital endowment	
TX0JP	JP import tariff on good 0	
TX1JP	JP import tariff on good 1	
TX2JP	JP import tariff on good 2	
TX3JP	JP import tariff on good 3	
TX5JP	JP import tariff on good 5	

TX6JP	JP import tariff on good 6
TX7JP	JP import tariff on good 7
TX8JP	JP import tariff on good 8
TX9JP	JP import tariff on good 9
alphaL0_US	labour share parameter for good X0US
alphaK0_US	capital share parameter for good X0US
alpha90_US	exponent for (intermediate) good X9US in good X0US
alpha10_US	exponent for (intermediate) good X1US in good X0US
alphaL1_US	labour share parameter for good X1US
alphaK1_US	capital share parameter for good X1US
alpha91_US	labour for (intermediate) good X9US in good X1US
alpha01_US	exponent for (intermediate) good X0US in good X1US
alphaL2_US	labour share parameter for good X2US
alphaK2_US	capital share parameter for good X2US
alpha92_US	exponent for (intermediate) good X9US in good X2US
alpha72_US	exponent for (intermediate) good X7US in good X2US
alphaL3_US	labour share parameter for good X3US
alphaK3_US	capital share parameter for good X3US
alpha23_US	exponent for (intermediate) good X2US in good X3US
alpha93_US	exponent for (intermediate) good X9US in good X3US
alphaL5_US	labour share parameter for good X5US
alphaK5_US	capital share parameter for good X5US
alpha95_US	exponent for (intermediate) good X9US in good X5US
alpha65_US	exponent for (intermediate) good X6US in good X5US
alphaL6_US	labour share parameter for good X6US
alphaK6_US	capital share parameter for good X6US
alpha96_US	exponent for (intermediate) good X9US in good X6US
alpha56_US	exponent for (intermediate) good X5US in good X6US
alphaL7_US	labour share parameter for good X7US
alphaK7_US	capital share parameter for good X7US
alpha97_US	exponent for (intermediate) good X9US in good X7US
alpha67_US	exponent for (intermediate) good X6US in good X7US
alphaL8_US	labour share parameter for good X8US
alphaK8_US	capital share parameter for good X8US
alpha98_US	exponent for (intermediate) good X9US in good X8US
alpha68_US	exponent for (intermediate) good X6US in good X8US
alphaL9_US	labour share parameter for good X9US
alphaK9_US	capital share parameter for good X9US
alpha69_US	exponent for (intermediate) good X6US in good X9US
alpha39_US	exponent for (intermediate) good X3US in good X9US
phi0US	exponent for consumption share of good X0US
phi1US	exponent for consumption share of good X1US
phi2US	exponent for consumption share of good X2US
phi3US	exponent for consumption share of good X3US
phi5US	exponent for consumption share of good X5US

phi6US	exponent for consumption share of good X6US	TX2US	US import tariff on good 2
phi7US	exponent for consumption share of good X7US	TX3US	US import tariff on good 3
phi8US	exponent for consumption share of good X8US	TX5US	US import tariff on good 5
LUS	labor endowment	TX6US	US import tariff on good 6
KUS	capital endowment	TX7US	US import tariff on good 7
TX0US	US import tariff on good 0	TX8US	US import tariff on good 8
TX1US	US import tariff on good 1	TX9US	US import tariff on good 9;

* PARAMETER VALUES PER COUNTRY

*   THE NETHERLANDS

*   FACTOR ENDOWMENTS
LNL = 8; KNL = 17;
*   PRODUCTION SHARES
alphaL0_NL = (4/29); alphaK0_NL = (5/29); alpha90_NL = (13/29); alpha10_NL = (4/29);
alphaL1_NL = (4/26); alphaK1_NL = (1/26); alpha91_NL = (11/26); alpha01_NL = (7/26);
alphaL2_NL = (5/47); alphaK2_NL = (10/47); alpha92_NL = (27/47); alpha62_NL = (1/47);
alphaL3_NL = (1/45); alphaK3_NL = (1/45); alpha23_NL = (25/45); alpha93_NL = (9/45);
alphaL5_NL = (6/38); alphaK5_NL = (2/38); alpha95_NL = (18/38); alpha35_NL = (6/38);
alphaL6_NL = (16/48); alphaK6_NL = (3/48); alpha96_NL = (21/48); alpha56_NL = (4/48);
alphaL7_NL = (8/28); alphaK7_NL = (1/28); alpha97_NL = (10/28); alpha67_NL = (5/28);
alphaL8_NL = (11/34); alphaK8_NL = (2/34); alpha98_NL = (15/34); alpha68_NL = (4/34);
alphaL9_NL = (91/146); alphaK9_NL = (27/146); alpha69_NL = (7/146); alpha89_NL = (4/146);
*   CONSUMER PREFERENCES
phi0NL = (6228/518025); phi1NL = (28278/518025); phi2NL = (77/518025); phi3NL = (7545/518025); phi5NL = (13035/518025); phi6NL = (19088/518025); phi7NL = (8623/518025); phi8NL = (11888/518025);
*   APPLIED IMPORT TARIFF RATES
TX0NL = 0.10; TX1NL = 0.14; TX2NL = 0.05; TX3NL = 0.03; TX5NL = 0.04; TX6NL = 0.09; TX7NL = 0.04; TX8NL = 0.06; TX9NL = 0;
*   VALUES FOR SIMULATION CASE 1; UNILATERAL IMPORT TARIFF DROP OF GOOD 6
*TX0NL = 0.10; TX1NL = 0.14; TX2NL = 0.05; TX3NL = 0.03; TX5NL = 0.04; TX6NL = 0; TX7NL = 0.04; TX8NL = 0.06; TX9NL = 0;
*   VALUES FOR SIMULATION CASE 2; UNILATERAL IMPORT TARIFF DROP OF ALL GOODS
*TX0NL = 0; TX1NL = 0; TX2NL = 0; TX3NL = 0; TX5NL = 0; TX6NL = 0; TX7NL = 0; TX8NL = 0; TX9NL = 0;

*   GERMANY

*   FACTOR ENDOWMENTS
LDE = 39; KDE = 67;
*   PRODUCTION SHARES
alphaL0_DE = (5/26); alphaK0_DE = (5/26); alpha90_DE = (13/26); alpha10_DE = (2/26);
alphaL1_DE = (5/24); alphaK1_DE = (0/24); alpha91_DE = (12/24); alpha01_DE = (4/24);
alphaL2_DE = (14/37); alphaK2_DE = (5/37); alpha92_DE = (15/37); alpha62_DE = (3/37);
alphaL3_DE = (1/25); alphaK3_DE = (0/25); alpha93_DE = (11/25); alpha23_DE = (10/25);
alphaL5_DE = (7/28); alphaK5_DE = (2/28); alpha95_DE = (14/28); alpha65_DE = (2/28);
alphaL6_DE = (16/49); alphaK6_DE = (3/49); alpha96_DE = (22/49); alpha56_DE = (3/49);
alphaL7_DE = (13/38); alphaK7_DE = (2/38); alpha97_DE = (12/38); alpha67_DE = (7/38);
alphaL8_DE = (11/29); alphaK8_DE = (2/29); alpha98_DE = (9/29); alpha68_DE = (4/29);
alphaL9_DE = (81/130); alphaK9_DE = (26/130); alpha69_DE = (8/130); alpha89_DE = (3/130);
*   CONSUMER PREFERENCES
phi0DE = (24009/2260776); phi1DE = (137823/2260776); phi2DE = (8670/2260776); phi3DE = (36764/2260776); phi5DE = (59377/2260776); phi6DE = (106022/2260776); phi7DE = (99521/2260776); phi8DE = (60903/2260776);
*   APPLIED IMPORT TARIFF RATES
TX0DE = 0.10; TX1DE = 0.14; TX2DE = 0.05; TX3DE = 0.03; TX5DE = 0.04; TX6DE = 0.09; TX7DE = 0.04; TX8DE = 0.06; TX9DE = 0;

*   BELGIUM

*   FACTOR ENDOWMENTS
LBE = 5; KBE = 11;
*   PRODUCTION SHARES
alphaL0_BE = (2/27); alphaK0_BE = (4/27); alpha90_BE = (11/27); alpha10_BE = (6/27);
alphaL1_BE = (4/28); alphaK1_BE = (2/28); alpha91_BE = (13/28); alpha01_BE = (5/28);

alphaL2_BE = (5/30); alphaK2_BE = (3/30); alpha92_BE = (18/30); alpha82_BE = (1/30);
alphaL3_BE = (1/27); alphaK3_BE = (0/27); alpha93_BE = (12/27); alpha23_BE = (8/27);
alphaL5_BE = (10/44); alphaK5_BE = (4/44); alpha95_BE = (21/44); alpha35_BE = (5/44);
alphaL6_BE = (14/56); alphaK6_BE = (5/56); alpha96_BE = (29/56); alpha56_BE = (4/56);
alphaL7_BE = (6/22); alphaK7_BE = (2/22); alpha97_BE = (8/22); alpha67_BE = (4/22);
alphaL8_BE = (13/45); alphaK8_BE = (3/45); alpha98_BE = (16/45); alpha68_BE = (9/45);
alphaL9_BE = (90/150); alphaK9_BE = (30/150); alpha69_BE = (10/150); alpha59_BE = (4/150);
*   CONSUMER PREFERENCES
phi0BE = (3192/321723); phi1BE = (23495/321723); phi2BE = (71/321723); phi3BE = (6610/321723); phi5BE = (6973/321723); phi6BE = (10606/321723); phi7BE = (5393/321723); phi8BE = (6245/321723);
*   APPLIED IMPORT TARIFF RATES
TX0BE = 0.10; TX1BE = 0.14; TX2BE = 0.05; TX3BE = 0.03; TX5BE = 0.04; TX6BE = 0.09; TX7BE = 0.04; TX8BE = 0.06; TX9BE = 0;

*   FRANCE

*   FACTOR ENDOWMENTS
LFR = 26; KFR = 58;
*   PRODUCTION SHARES
alphaL0_FR = (5/43); alphaK0_FR = (7/43); alpha90_FR = (12/43); alpha50_FR = (3/43);
alphaL1_FR = (13/81); alphaK1_FR = (4/81); alpha91_FR = (33/81); alpha01_FR = (21/81);
alphaL2_FR = (7/35); alphaK2_FR = (4/35); alpha92_FR = (11/35); alpha62_FR = (3/35);
alphaL3_FR = (1/28); alphaK3_FR = (0/28); alpha23_FR = (13/28); alpha93_FR = (9/28);
alphaL5_FR = (4/28); alphaK5_FR = (1/28); alpha95_FR = (15/28); alpha65_FR = (2/28);
alphaL6_FR = (19/64); alphaK6_FR = (5/64); alpha96_FR = (28/64); alpha56_FR = (3/64);
alphaL7_FR = (9/45); alphaK7_FR = (2/45); alpha97_FR = (18/45); alpha67_FR = (9/45);
alphaL8_FR = (8/29); alphaK8_FR = (2/29); alpha98_FR = (11/29); alpha68_FR = (6/29);
alphaL9_FR = (81/159); alphaK9_FR = (26/159); alpha69_FR = (7/159); alpha79_FR = (2/159);
*   CONSUMER PREFERENCES
phi0FR = (38641/1928081); phi1FR = (101783/1928081); phi2FR = (140/1928081); phi3FR = (34807/1928081); phi5FR = (46422/1928081); phi6FR = (58476/1928081); phi7FR = (71691/1928081); phi8FR = (41375/1928081);
*   APPLIED IMPORT TARIFF RATES
TX0FR = 0.10; TX1FR = 0.14; TX2FR = 0.05; TX3FR = 0.03; TX5FR = 0.04; TX6FR = 0.09; TX7FR = 0.04; TX8FR = 0.06; TX9FR = 0;

*   THE UNITED KINGDOM

*   FACTOR ENDOWMENTS
LUK = 29; KUK = 39;
*   PRODUCTION SHARES
alphaL0_UK = (6/26); alphaK0_UK = (8/26); alpha90_UK = (9/26); alpha10_UK = (2/26);
alphaL1_UK = (6/24); alphaK1_UK = (1/24); alpha91_UK = (9/24); alpha01_UK = (4/24);
alphaL2_UK = (12/57); alphaK2_UK = (14/57); alpha92_UK = (23/57); alpha62_UK = (3/57);
alphaL3_UK = (2/24); alphaK3_UK = (0/24); alpha23_UK = (16/24); alpha93_UK = (4/24);
alphaL5_UK = (7/25); alphaK5_UK = (1/25); alpha95_UK = (13/25); alpha65_UK = (2/25);
alphaL6_UK = (19/51); alphaK6_UK = (2/51); alpha96_UK = (22/51); alpha56_UK = (3/51);
alphaL7_UK = (11/35); alphaK7_UK = (2/35); alpha97_UK = (11/35); alpha67_UK = (7/35);
alphaL8_UK = (11/29); alphaK8_UK = (1/29); alpha98_UK = (10/29); alpha68_UK = (4/29);
alphaL9_UK = (78/123); alphaK9_UK = (17/123); alpha69_UK = (6/123); alpha89_UK = (3/123);
*   CONSUMER PREFERENCES
phi0UK = (22814/1822133); phi1UK = (83630/1822133); phi2UK = (1453/1822133); phi3UK = (22835/1822133); phi5UK = (21283/1822133); phi6UK = (64784/1822133); phi7UK = (54024/1822133); phi8UK = (36147/1822133);
*   APPLIED IMPORT TARIFF RATES
TX0UK = 0.10; TX1UK = 0.14; TX2UK = 0.05; TX3UK = 0.03; TX5UK = 0.04; TX6UK = 0.09; TX7UK = 0.04; TX8UK = 0.06; TX9UK = 0;

*   ITALY

*   FACTOR ENDOWMENTS
LIT = 23; KIT = 44;
*   PRODUCTION SHARES
alphaL0_IT = (7/27); alphaK0_IT = (10/27); alpha90_IT = (7/27); alpha50_IT = (2/27);
alphaL1_IT = (4/26); alphaK1_IT = (2/26); alpha91_IT = (13/26); alpha01_IT = (5/26);

alphaL2_IT = (7/36); alphaK2_IT = (11/36); alpha92_IT = (12/36); alpha62_IT = (2/36);
alphaL3_IT = (1/22); alphaK3_IT = (1/22); alpha23_IT = (14/22); alpha93_IT = (5/22);
alphaL5_IT = (7/31); alphaK5_IT = (3/31); alpha95_IT = (15/31); alpha65_IT = (3/31);
alphaL6_IT = (14/54); alphaK6_IT = (6/54); alpha96_IT = (25/54); alpha56_IT = (3/54);
alphaL7_IT = (10/49); alphaK7_IT = (4/49); alpha97_IT = (17/49); alpha67_IT = (14/49);
alphaL8_IT = (5/29); alphaK8_IT = (2/29); alpha98_IT = (13/29); alpha68_IT = (3/29);
alphaL9_IT = (80/129); alphaK9_IT = (24/129); alpha69_IT = (7/129); alpha89_IT = (3/129);
*   CONSUMER PREFERENCES
phi0IT = (29933/1521850); phi1IT = (96027/1521850); phi2IT = (314/1521850); phi3IT = (22117/1521850); phi5IT = (28819/1521850); phi6IT = (96051/1521850); phi7IT = (32868/1521850); phi8IT = (34844/1521850);
*   APPLIED IMPORT TARIFF RATES
TX0IT = 0.10; TX1IT = 0.14; TX2IT = 0.05; TX3IT = 0.03; TX5IT = 0.04; TX6IT = 0.09; TX7IT = 0.04; TX8IT = 0.06; TX9IT = 0;

*   CHINA

*   FACTOR ENDOWMENTS
LCN = 612; KCN = 286;
*   PRODUCTION SHARES
alphaL0_CN = (22/35); alphaK0_CN = (1/35); alpha10_CN = (4/35); alpha90_CN = (4/35);
alphaL1_CN = (2/26); alphaK1_CN = (1/26); alpha01_CN = (13/26); alpha91_CN = (5/26);
alphaL2_CN = (33/152); alphaK2_CN = (10/152); alpha92_CN = (43/152); alpha62_CN = (17/152);
alphaL3_CN = (6/104); alphaK3_CN = (4/104); alpha23_CN = (64/104); alpha93_CN = (15/104);
alphaL5_CN = (5/58); alphaK5_CN = (2/58); alpha95_CN = (17/58); alpha25_CN = (9/58);
alphaL6_CN = (17/138); alphaK6_CN = (6/138); alpha96_CN = (39/138); alpha56_CN = (19/138);
alphaL7_CN = (10/86); alphaK7_CN = (3/86); alpha67_CN = (33/86); alpha97_CN = (17/86);
alphaL8_CN = (5/58); alphaK8_CN = (2/58); alpha68_CN = (23/58); alpha98_CN = (15/58);
alphaL9_CN = (48/177); alphaK9_CN = (21/177); alpha69_CN = (38/177); alpha89_CN = (13/177);
*   CONSUMER PREFERENCES
phi0CN = (266889/2805048); phi1CN = (420921/2805048); phi2CN = (2773/2805048); phi3CN = (4891/2805048); phi5CN = (27394/2805048); phi6CN = (174640/2805048); phi7CN = (62127/2805048); phi8CN = (104471/2805048);
*   APPLIED IMPORT TARIFF RATES
TX0CN = 0.09; TX1CN = 0.13; TX2CN = 0.06; TX3CN = 0.06; TX5CN = 0.06; TX6CN = 0.08; TX7CN = 0.08; TX8CN = 0.10; TX9CN = 0;

*   JAPAN

*   FACTOR ENDOWMENTS
LJP = 58; KJP = 109;
*   PRODUCTION SHARES
alphaL0_JP = (6/28); alphaK0_JP = (7/28); alpha90_JP = (7/28); alpha50_JP = (2/28);
alphaL1_JP = (5/28); alphaK1_JP = (0/28); alpha91_JP = (9/28); alpha01_JP = (6/28);
alphaL2_JP = (11/51); alphaK2_JP = (8/51); alpha92_JP = (20/51); alpha32_JP = (6/51);
alphaL3_JP = (0/51); alphaK3_JP = (1/51); alpha23_JP = (29/51); alpha93_JP = (11/51);
alphaL5_JP = (2/53); alphaK5_JP = (6/53); alpha95_JP = (23/53); alpha35_JP = (8/53);
alphaL6_JP = (25/77); alphaK6_JP = (10/77); alpha96_JP = (25/77); alpha56_JP = (7/77);
alphaL7_JP = (7/22); alphaK7_JP = (2/22); alpha97_JP = (6/22); alpha67_JP = (4/22);
alphaL8_JP = (7/25); alphaK8_JP = (4/25); alpha98_JP = (7/25); alpha68_JP = (4/25);
alphaL9_JP = (67/130); alphaK9_JP = (30/130); alpha69_JP = (9/130); alpha39_JP = (5/130);
*   CONSUMER PREFERENCES
phi0JP = (43522/4294208); phi1JP = (277699/4294208); phi2JP = (68/4294208); phi3JP = (111119/4294208); phi5JP = (35215/4294208); phi6JP = (82486/4294208); phi7JP = (92478/4294208); phi8JP = (93262/4294208);
*   APPLIED IMPORT TARIFF RATES
TX0JP = 0.11; TX1JP = 0.09; TX2JP = 0.01; TX3JP = 0.04; TX5JP = 0.06; TX6JP = 0.06; TX7JP = 0.05; TX8JP = 0.13; TX9JP = 0;

*   THE UNITED STATES OF AMERICA

*   FACTOR ENDOWMENTS
LUS = 140; KUS = 275;
*   PRODUCTION SHARES
alphaL0_US = (4/28); alphaK0_US = (5/28); alpha90_US = (8/28); alpha10_US = (1/28);
alphaL1_US = (3/23); alphaK1_US = (1/23); alpha91_US = (7/23); alpha01_US = (6/23);

alphaL2_US = (11/81); alphaK2_US = (7/81); alpha92_US = (18/81); alpha72_US = (4/81);
alphaL3_US = (2/60); alphaK3_US = (1/60); alpha23_US = (35/60); alpha93_US = (11/60);
alphaL5_US = (7/56); alphaK5_US = (2/56); alpha95_US = (19/56); alpha65_US = (3/56);
alphaL6_US = (25/92); alphaK6_US = (6/92); alpha96_US = (31/92); alpha56_US = (6/92);
alphaL7_US = (6/26); alphaK7_US = (1/26); alpha97_US = (7/26); alpha67_US = (6/26);
alphaL8_US = (21/64); alphaK8_US = (6/64); alpha98_US = (11/64); alpha68_US = (9/64);
alphaL9_US = (69/134); alphaK9_US = (21/134); alpha69_US = (5/134); alpha39_US = (3/134);
*   CONSUMER PREFERENCES
phi0US = (68308/12111249); phi1US = (503305/12111249); phi2US = (208/12111249); phi3US = (223886/12111249); phi5US = (230057/12111249);
phi6US = (269496/12111249); phi7US = (172599/12111249); phi8US = (261120/12111249);
*   APPLIED IMPORT TARIFF RATES
TX0US = 0.06; TX1US = 0.07; TX2US = 0.05; TX3US = 0.002; TX5US = 0.03; TX6US = 0.09; TX7US = 0.03; TX8US = 0.05; TX9US = 0;

POSITIVE VARIABLES

X0NL	production good X0NL	X9FR_NL	import of good 9 by NL from FR
X1NL	production good X1NL	X0UK_NL	import of good 0 by NL from UK
X2NL	production good X2NL	X1UK_NL	import of good 1 by NL from UK
X3NL	production good X3NL	X2UK_NL	import of good 2 by NL from UK
X5NL	production good X5NL	X3UK_NL	import of good 3 by NL from UK
X6NL	production good X6NL	X5UK_NL	import of good 5 by NL from UK
X7NL	production good X7NL	X6UK_NL	import of good 6 by NL from UK
X8NL	production good X8NL	X7UK_NL	import of good 7 by NL from UK
X9NL	production good X9NL	X8UK_NL	import of good 8 by NL from UK
WNL	production welfare	X9UK_NL	import of good 9 by NL from UK
PX0NL	price good X0NL	X0IT_NL	import of good 0 by NL from IT
PX1NL	price good X1NL	X1IT_NL	import of good 1 by NL from IT
PX2NL	price good X2NL	X2IT_NL	import of good 2 by NL from IT
PX3NL	price good X3NL	X3IT_NL	import of good 3 by NL from IT
PX5NL	price good X5NL	X5IT_NL	import of good 5 by NL from IT
PX6NL	price good X6NL	X6IT_NL	import of good 6 by NL from IT
PX7NL	price good X7NL	X7IT_NL	import of good 7 by NL from IT
PX8NL	price good X8NL	X8IT_NL	import of good 8 by NL from IT
PX9NL	price good X9NL	X9IT_NL	import of good 9 by NL from IT
PWNL	price per unit welfare	X0CN_NL	import of good 0 by NL from CN
PLNL	price per unit labor	X1CN_NL	import of good 1 by NL from CN
PKNL	price per unit capital	X2CN_NL	import of good 2 by NL from CN
CONSNL	total income of household	X3CN_NL	import of good 3 by NL from CN
X0DE_NL	import of good 0 by NL from DE	X5CN_NL	import of good 5 by NL from CN
X1DE_NL	import of good 1 by NL from DE	X6CN_NL	import of good 6 by NL from CN
X2DE_NL	import of good 2 by NL from DE	X7CN_NL	import of good 7 by NL from CN
X3DE_NL	import of good 3 by NL from DE	X8CN_NL	import of good 8 by NL from CN
X5DE_NL	import of good 5 by NL from DE	X9CN_NL	import of good 9 by NL from CN
X6DE_NL	import of good 6 by NL from DE	X0JP_NL	import of good 0 by NL from JP
X7DE_NL	import of good 7 by NL from DE	X1JP_NL	import of good 1 by NL from JP
X8DE_NL	import of good 8 by NL from DE	X2JP_NL	import of good 2 by NL from JP
X9DE_NL	import of good 9 by NL from DE	X3JP_NL	import of good 3 by NL from JP
X0BE_NL	import of good 0 by NL from BE	X5JP_NL	import of good 5 by NL from JP
X1BE_NL	import of good 1 by NL from BE	X6JP_NL	import of good 6 by NL from JP
X2BE_NL	import of good 2 by NL from BE	X7JP_NL	import of good 7 by NL from JP
X3BE_NL	import of good 3 by NL from BE	X8JP_NL	import of good 8 by NL from JP
X5BE_NL	import of good 5 by NL from BE	X9JP_NL	import of good 9 by NL from JP
X6BE_NL	import of good 6 by NL from BE	X0US_NL	import of good 0 by NL from US
X7BE_NL	import of good 7 by NL from BE	X1US_NL	import of good 1 by NL from US
X8BE_NL	import of good 8 by NL from BE	X2US_NL	import of good 2 by NL from US
X9BE_NL	import of good 9 by NL from BE	X3US_NL	import of good 3 by NL from US
X0FR_NL	import of good 0 by NL from FR	X5US_NL	import of good 5 by NL from US
X1FR_NL	import of good 1 by NL from FR	X6US_NL	import of good 6 by NL from US
X2FR_NL	import of good 2 by NL from FR	X7US_NL	import of good 7 by NL from US
X3FR_NL	import of good 3 by NL from FR	X8US_NL	import of good 8 by NL from US
X5FR_NL	import of good 5 by NL from FR	X9US_NL	import of good 9 by NL from US
X6FR_NL	import of good 6 by NL from FR	TOT_IMP_0_NL	total imports of good zero by NL
X7FR_NL	import of good 7 by NL from FR	TOT_EXP_0_NL	total exports of good zero by NL
X8FR_NL	import of good 8 by NL from FR	TOT_IMP_1_NL	total imports of good one by NL

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TOT_EXP_1_NL	total exports of good one by NL		X6FR_DE	import of good 6 by DE from FR
TOT_IMP_2_NL	total imports of good two by NL		X7FR_DE	import of good 7 by DE from FR
TOT_EXP_2_NL	total exports of good two by NL		X8FR_DE	import of good 8 by DE from FR
TOT_IMP_3_NL	total imports of good three by NL		X9FR_DE	import of good 9 by DE from FR
TOT_EXP_3_NL	total exports of good three by NL		X0UK_DE	import of good 0 by DE from UK
TOT_IMP_5_NL	total imports of good five by NL		X1UK_DE	import of good 1 by DE from UK
TOT_EXP_5_NL	total exports of good five by NL		X2UK_DE	import of good 2 by DE from UK
TOT_IMP_6_NL	total imports of good six by NL		X3UK_DE	import of good 3 by DE from UK
TOT_EXP_6_NL	total exports of good six by NL		X5UK_DE	import of good 5 by DE from UK
TOT_IMP_7_NL	total imports of good seven by NL		X6UK_DE	import of good 6 by DE from UK
TOT_EXP_7_NL	total exports of good seven by NL		X7UK_DE	import of good 7 by DE from UK
TOT_IMP_8_NL	total imports of good eight by NL		X8UK_DE	import of good 8 by DE from UK
TOT_EXP_8_NL	total exports of good eight by NL		X9UK_DE	import of good 9 by DE from UK
TOT_IMP_9_NL	total imports of good nine by NL		X0IT_DE	import of good 0 by DE from IT
TOT_EXP_9_NL	total exports of good nine by NL		X1IT_DE	import of good 1 by DE from IT
TARIFF_INC_NL	total tariff income for NL		X2IT_DE	import of good 2 by DE from IT
			X3IT_DE	import of good 3 by DE from IT
X0DE	production good X0DE		X5IT_DE	import of good 5 by DE from IT
X1DE	production good X1DE		X6IT_DE	import of good 6 by DE from IT
X2DE	production good X2DE		X7IT_DE	import of good 7 by DE from IT
X3DE	production good X3DE		X8IT_DE	import of good 8 by DE from IT
X5DE	production good X5DE		X9IT_DE	import of good 9 by DE from IT
X6DE	production good X6DE		X0CN_DE	import of good 0 by DE from CN
X7DE	production good X7DE		X1CN_DE	import of good 1 by DE from CN
X8DE	production good X8DE		X2CN_DE	import of good 2 by DE from CN
X9DE	production good X9DE		X3CN_DE	import of good 3 by DE from CN
WDE	production welfare		X5CN_DE	import of good 5 by DE from CN
PX0DE	price good X0DE		X6CN_DE	import of good 6 by DE from CN
PX1DE	price good X1DE		X7CN_DE	import of good 7 by DE from CN
PX2DE	price good X2DE		X8CN_DE	import of good 8 by DE from CN
PX3DE	price good X3DE		X9CN_DE	import of good 9 by DE from CN
PX5DE	price good X5DE		X0JP_DE	import of good 0 by DE from JP
PX6DE	price good X6DE		X1JP_DE	import of good 1 by DE from JP
PX7DE	price good X7DE		X2JP_DE	import of good 2 by DE from JP
PX8DE	price good X8DE		X3JP_DE	import of good 3 by DE from JP
PX9DE	price good X9DE		X5JP_DE	import of good 5 by DE from JP
PWDE	price per unit welfare		X6JP_DE	import of good 6 by DE from JP
PLDE	price per unit labor		X7JP_DE	import of good 7 by DE from JP
PKDE	price per unit capital		X8JP_DE	import of good 8 by DE from JP
CONSDE	total income of household		X9JP_DE	import of good 9 by DE from JP
X0NL_DE	import of good 0 by DE from NL		X0US_DE	import of good 0 by DE from US
X1NL_DE	import of good 1 by DE from NL		X1US_DE	import of good 1 by DE from US
X2NL_DE	import of good 2 by DE from NL		X2US_DE	import of good 2 by DE from US
X3NL_DE	import of good 3 by DE from NL		X3US_DE	import of good 3 by DE from US
X5NL_DE	import of good 5 by DE from NL		X5US_DE	import of good 5 by DE from US
X6NL_DE	import of good 6 by DE from NL		X6US_DE	import of good 6 by DE from US
X7NL_DE	import of good 7 by DE from NL		X7US_DE	import of good 7 by DE from US
X8NL_DE	import of good 8 by DE from NL		X8US_DE	import of good 8 by DE from US
X9NL_DE	import of good 9 by DE from NL		X9US_DE	import of good 9 by DE from US
X0BE_DE	import of good 0 by DE from BE		TOT_IMP_0_DE	total imports of good zero by DE
X1BE_DE	import of good 1 by DE from BE		TOT_EXP_0_DE	total exports of good zero by DE
X2BE_DE	import of good 2 by DE from BE		TOT_IMP_1_DE	total imports of good one by DE
X3BE_DE	import of good 3 by DE from BE		TOT_EXP_1_DE	total exports of good one by DE
X5BE_DE	import of good 5 by DE from BE		TOT_IMP_2_DE	total imports of good two by DE
X6BE_DE	import of good 6 by DE from BE		TOT_EXP_2_DE	total exports of good two by DE
X7BE_DE	import of good 7 by DE from BE		TOT_IMP_3_DE	total imports of good three by DE
X8BE_DE	import of good 8 by DE from BE		TOT_EXP_3_DE	total exports of good three by DE
X9BE_DE	import of good 9 by DE from BE		TOT_IMP_5_DE	total imports of good five by DE
X0FR_DE	import of good 0 by DE from FR		TOT_EXP_5_DE	total exports of good five by DE
X1FR_DE	import of good 1 by DE from FR		TOT_IMP_6_DE	total imports of good six by DE
X2FR_DE	import of good 2 by DE from FR		TOT_EXP_6_DE	total exports of good six by DE
X3FR_DE	import of good 3 by DE from FR		TOT_IMP_7_DE	total imports of good seven by DE
X5FR_DE	import of good 5 by DE from FR		TOT_EXP_7_DE	total exports of good seven by DE

TOT_IMP_8_DE   total imports of good eight by DE
TOT_EXP_8_DE   total exports of good eight by DE
TOT_IMP_9_DE   total imports of good nine by DE
TOT_EXP_9_DE   total exports of good nine by DE
TARIFF_INC_DE   total tariff income for DE

X0BE   production good X0BE
X1BE   production good X1BE
X2BE   production good X2BE
X3BE   production good X3BE
X5BE   production good X5BE
X6BE   production good X6BE
X7BE   production good X7BE
X8BE   production good X8BE
X9BE   production good X9BE
WBE   production welfare
PX0BE   price good X0BE
PX1BE   price good X1BE
PX2BE   price good X2BE
PX3BE   price good X3BE
PX5BE   price good X5BE
PX6BE   price good X6BE
PX7BE   price good X7BE
PX8BE   price good X8BE
PX9BE   price good X9BE
PWBE   price per unit welfare
PLBE   price per unit labor
PKBE   price per unit capital
CONSBE   total income of household
X0NL_BE   import of good 0 by BE from NL
X1NL_BE   import of good 1 by BE from NL
X2NL_BE   import of good 2 by BE from NL
X3NL_BE   import of good 3 by BE from NL
X5NL_BE   import of good 5 by BE from NL
X6NL_BE   import of good 6 by BE from NL
X7NL_BE   import of good 7 by BE from NL
X8NL_BE   import of good 8 by BE from NL
X9NL_BE   import of good 9 by BE from NL
X0DE_BE   import of good 0 by BE from DE
X1DE_BE   import of good 1 by BE from DE
X2DE_BE   import of good 2 by BE from DE
X3DE_BE   import of good 3 by BE from DE
X5DE_BE   import of good 5 by BE from DE
X6DE_BE   import of good 6 by BE from DE
X7DE_BE   import of good 7 by BE from DE
X8DE_BE   import of good 8 by BE from DE
X9DE_BE   import of good 9 by BE from DE
X0FR_BE   import of good 0 by FR from DE
X1FR_BE   import of good 1 by FR from DE
X2FR_BE   import of good 2 by FR from DE
X3FR_BE   import of good 3 by FR from DE
X5FR_BE   import of good 5 by FR from DE
X6FR_BE   import of good 6 by FR from DE
X7FR_BE   import of good 7 by FR from DE
X8FR_BE   import of good 8 by FR from DE
X9FR_BE   import of good 9 by FR from DE
X0UK_BE   import of good 0 by BE from UK
X1UK_BE   import of good 1 by BE from UK
X2UK_BE   import of good 2 by BE from UK
X3UK_BE   import of good 3 by BE from UK
X5UK_BE   import of good 5 by BE from UK
X6UK_BE   import of good 6 by BE from UK
X7UK_BE   import of good 7 by BE from UK

X8UK_BE   import of good 8 by BE from UK
X9UK_BE   import of good 9 by BE from UK
X0IT_BE   import of good 0 by BE from IT
X1IT_BE   import of good 1 by BE from IT
X2IT_BE   import of good 2 by BE from IT
X3IT_BE   import of good 3 by BE from IT
X5IT_BE   import of good 5 by BE from IT
X6IT_BE   import of good 6 by BE from IT
X7IT_BE   import of good 7 by BE from IT
X8IT_BE   import of good 8 by BE from IT
X9IT_BE   import of good 9 by BE from IT
X0CN_BE   import of good 0 by BE from CN
X1CN_BE   import of good 1 by BE from CN
X2CN_BE   import of good 2 by BE from CN
X3CN_BE   import of good 3 by BE from CN
X5CN_BE   import of good 5 by BE from CN
X6CN_BE   import of good 6 by BE from CN
X7CN_BE   import of good 7 by BE from CN
X8CN_BE   import of good 8 by BE from CN
X9CN_BE   import of good 9 by BE from CN
X0JP_BE   import of good 0 by BE from JP
X1JP_BE   import of good 1 by BE from JP
X2JP_BE   import of good 2 by BE from JP
X3JP_BE   import of good 3 by BE from JP
X5JP_BE   import of good 5 by BE from JP
X6JP_BE   import of good 6 by BE from JP
X7JP_BE   import of good 7 by BE from JP
X8JP_BE   import of good 8 by BE from JP
X9JP_BE   import of good 9 by BE from JP
X0US_BE   import of good 0 by BE from US
X1US_BE   import of good 1 by BE from US
X2US_BE   import of good 2 by BE from US
X3US_BE   import of good 3 by BE from US
X5US_BE   import of good 5 by BE from US
X6US_BE   import of good 6 by BE from US
X7US_BE   import of good 7 by BE from US
X8US_BE   import of good 8 by BE from US
X9US_BE   import of good 9 by BE from US
TOT_IMP_0_BE   total imports of good zero by BE
TOT_EXP_0_BE   total exports of good zero by BE
TOT_IMP_1_BE   total imports of good one by BE
TOT_EXP_1_BE   total exports of good one by BE
TOT_IMP_2_BE   total imports of good two by BE
TOT_EXP_2_BE   total exports of good two by BE
TOT_IMP_3_BE   total imports of good three by BE
TOT_EXP_3_BE   total exports of good three by BE
TOT_IMP_5_BE   total imports of good five by BE
TOT_EXP_5_BE   total exports of good five by BE
TOT_IMP_6_BE   total imports of good six by BE
TOT_EXP_6_BE   total exports of good six by BE
TOT_IMP_7_BE   total imports of good seven by BE
TOT_EXP_7_BE   total exports of good seven by BE
TOT_IMP_8_BE   total imports of good eight by BE
TOT_EXP_8_BE   total exports of good eight by BE
TOT_IMP_9_BE   total imports of good nine by BE
TOT_EXP_9_BE   total exports of good nine by BE
TARIFF_INC_BE total tariff income for BE

X0FR   production good X0FR
X1FR   production good X1FR
X2FR   production good X2FR
X3FR   production good X3FR
X5FR   production good X5FR

X6FR	production good X6FR	X0CN_FR	import of good 0 by FR from CN
X7FR	production good X7FR	X1CN_FR	import of good 1 by FR from CN
X8FR	production good X8FR	X2CN_FR	import of good 2 by FR from CN
X9FR	production good X9FR	X3CN_FR	import of good 3 by FR from CN
WFR	production welfare	X5CN_FR	import of good 5 by FR from CN
PX0FR	price good X0FR	X6CN_FR	import of good 6 by FR from CN
PX1FR	price good X1FR	X7CN_FR	import of good 7 by FR from CN
PX2FR	price good X2FR	X8CN_FR	import of good 8 by FR from CN
PX3FR	price good X3FR	X9CN_FR	import of good 9 by FR from CN
PX5FR	price good X5FR	X0JP_FR	import of good 0 by FR from JP
PX6FR	price good X6FR	X1JP_FR	import of good 1 by FR from JP
PX7FR	price good X7FR	X2JP_FR	import of good 2 by FR from JP
PX8FR	price good X8FR	X3JP_FR	import of good 3 by FR from JP
PX9FR	price good X9FR	X5JP_FR	import of good 5 by FR from JP
PWFR	price per unit welfare	X6JP_FR	import of good 6 by FR from JP
PLFR	price per unit labor	X7JP_FR	import of good 7 by FR from JP
PKFR	price per unit capital	X8JP_FR	import of good 8 by FR from JP
CONSFR	total income of household	X9JP_FR	import of good 9 by FR from JP
X0NL_FR	import of good 0 by FR from NL	X0US_FR	import of good 0 by FR from US
X1NL_FR	import of good 1 by FR from NL	X1US_FR	import of good 1 by FR from US
X2NL_FR	import of good 2 by FR from NL	X2US_FR	import of good 2 by FR from US
X3NL_FR	import of good 3 by FR from NL	X3US_FR	import of good 3 by FR from US
X5NL_FR	import of good 5 by FR from NL	X5US_FR	import of good 5 by FR from US
X6NL_FR	import of good 6 by FR from NL	X6US_FR	import of good 6 by FR from US
X7NL_FR	import of good 7 by FR from NL	X7US_FR	import of good 7 by FR from US
X8NL_FR	import of good 8 by FR from NL	X8US_FR	import of good 8 by FR from US
X9NL_FR	import of good 9 by FR from NL	X9US_FR	import of good 9 by FR from US
X0DE_FR	import of good 0 by FR from DE	TOT_IMP_0_FR	total imports of good zero by FR
X1DE_FR	import of good 1 by FR from DE	TOT_EXP_0_FR	total exports of good zero by FR
X2DE_FR	import of good 2 by FR from DE	TOT_IMP_1_FR	total imports of good one by FR
X3DE_FR	import of good 3 by FR from DE	TOT_EXP_1_FR	total exports of good one by FR
X5DE_FR	import of good 5 by FR from DE	TOT_IMP_2_FR	total imports of good two by FR
X6DE_FR	import of good 6 by FR from DE	TOT_EXP_2_FR	total exports of good two by FR
X7DE_FR	import of good 7 by FR from DE	TOT_IMP_3_FR	total imports of good three by FR
X8DE_FR	import of good 8 by FR from DE	TOT_EXP_3_FR	total exports of good three by FR
X9DE_FR	import of good 9 by FR from DE	TOT_IMP_5_FR	total imports of good five by FR
X0BE_FR	import of good 0 by FR from BE	TOT_EXP_5_FR	total exports of good five by FR
X1BE_FR	import of good 1 by FR from BE	TOT_IMP_6_FR	total imports of good six by FR
X2BE_FR	import of good 2 by FR from BE	TOT_EXP_6_FR	total exports of good six by FR
X3BE_FR	import of good 3 by FR from BE	TOT_IMP_7_FR	total imports of good seven by FR
X5BE_FR	import of good 5 by FR from BE	TOT_EXP_7_FR	total exports of good seven by FR
X6BE_FR	import of good 6 by FR from BE	TOT_IMP_8_FR	total imports of good eight by FR
X7BE_FR	import of good 7 by FR from BE	TOT_EXP_8_FR	total exports of good eight by FR
X8BE_FR	import of good 8 by FR from BE	TOT_IMP_9_FR	total imports of good nine by FR
X9BE_FR	import of good 9 by FR from BE	TOT_EXP_9_FR	total exports of good nine by FR
X0UK_FR	import of good 0 by FR from UK	TARIFF_INC_FR	total tariff income for FR
X1UK_FR	import of good 1 by FR from UK		
X2UK_FR	import of good 2 by FR from UK	X0UK	production good X0UK
X3UK_FR	import of good 3 by FR from UK	X1UK	production good X1UK
X5UK_FR	import of good 5 by FR from UK	X2UK	production good X2UK
X6UK_FR	import of good 6 by FR from UK	X3UK	production good X3UK
X7UK_FR	import of good 7 by FR from UK	X5UK	production good X5UK
X8UK_FR	import of good 8 by FR from UK	X6UK	production good X6UK
X9UK_FR	import of good 9 by FR from UK	X7UK	production good X7UK
X0IT_FR	import of good 0 by FR from IT	X8UK	production good X8UK
X1IT_FR	import of good 1 by FR from IT	X9UK	production good X9UK
X2IT_FR	import of good 2 by FR from IT	WUK	production welfare
X3IT_FR	import of good 3 by FR from IT	PX0UK	price good X0UK
X5IT_FR	import of good 5 by FR from IT	PX1UK	price good X1UK
X6IT_FR	import of good 6 by FR from IT	PX2UK	price good X2UK
X7IT_FR	import of good 7 by FR from IT	PX3UK	price good X3UK
X8IT_FR	import of good 8 by FR from IT	PX5UK	price good X5UK
X9IT_FR	import of good 9 by FR from IT	PX6UK	price good X6UK

PX7UK	price good X7UK
PX8UK	price good X8UK
PX9UK	price good X9UK
PWUK	price per unit welfare
PLUK	price per unit labor
PKUK	price per unit capital
CONSUK	total income of household
X0NL_UK	import of good 0 by UK from NL
X1NL_UK	import of good 1 by UK from NL
X2NL_UK	import of good 2 by UK from NL
X3NL_UK	import of good 3 by UK from NL
X5NL_UK	import of good 5 by UK from NL
X6NL_UK	import of good 6 by UK from NL
X7NL_UK	import of good 7 by UK from NL
X8NL_UK	import of good 8 by UK from NL
X9NL_UK	import of good 9 by UK from NL
X0DE_UK	import of good 0 by UK from DE
X1DE_UK	import of good 1 by UK from DE
X2DE_UK	import of good 2 by UK from DE
X3DE_UK	import of good 3 by UK from DE
X5DE_UK	import of good 5 by UK from DE
X6DE_UK	import of good 6 by UK from DE
X7DE_UK	import of good 7 by UK from DE
X8DE_UK	import of good 8 by UK from DE
X9DE_UK	import of good 9 by UK from DE
X0BE_UK	import of good 0 by UK from BE
X1BE_UK	import of good 1 by UK from BE
X2BE_UK	import of good 2 by UK from BE
X3BE_UK	import of good 3 by UK from BE
X5BE_UK	import of good 5 by UK from BE
X6BE_UK	import of good 6 by UK from BE
X7BE_UK	import of good 7 by UK from BE
X8BE_UK	import of good 8 by UK from BE
X9BE_UK	import of good 9 by UK from BE
X0FR_UK	import of good 0 by UK from FR
X1FR_UK	import of good 1 by UK from FR
X2FR_UK	import of good 2 by UK from FR
X3FR_UK	import of good 3 by UK from FR
X5FR_UK	import of good 5 by UK from FR
X6FR_UK	import of good 6 by UK from FR
X7FR_UK	import of good 7 by UK from FR
X8FR_UK	import of good 8 by UK from FR
X9FR_UK	import of good 9 by UK from FR
X0IT_UK	import of good 0 by UK from IT
X1IT_UK	import of good 1 by UK from IT
X2IT_UK	import of good 2 by UK from IT
X3IT_UK	import of good 3 by UK from IT
X5IT_UK	import of good 5 by UK from IT
X6IT_UK	import of good 6 by UK from IT
X7IT_UK	import of good 7 by UK from IT
X8IT_UK	import of good 8 by UK from IT
X9IT_UK	import of good 9 by UK from IT
X0CN_UK	import of good 0 by UK from CN
X1CN_UK	import of good 1 by UK from CN
X2CN_UK	import of good 2 by UK from CN
X3CN_UK	import of good 3 by UK from CN
X5CN_UK	import of good 5 by UK from CN
X6CN_UK	import of good 6 by UK from CN
X7CN_UK	import of good 7 by UK from CN
X8CN_UK	import of good 8 by UK from CN
X9CN_UK	import of good 9 by UK from CN
X0JP_UK	import of good 0 by UK from JP
X1JP_UK	import of good 1 by UK from JP

X2JP_UK	import of good 2 by UK from JP
X3JP_UK	import of good 3 by UK from JP
X5JP_UK	import of good 5 by UK from JP
X6JP_UK	import of good 6 by UK from JP
X7JP_UK	import of good 7 by UK from JP
X8JP_UK	import of good 8 by UK from JP
X9JP_UK	import of good 9 by UK from JP
X0US_UK	import of good 0 by UK from US
X1US_UK	import of good 1 by UK from US
X2US_UK	import of good 2 by UK from US
X3US_UK	import of good 3 by UK from US
X5US_UK	import of good 5 by UK from US
X6US_UK	import of good 6 by UK from US
X7US_UK	import of good 7 by UK from US
X8US_UK	import of good 8 by UK from US
X9US_UK	import of good 9 by UK from US
TOT_IMP_0_UK	total imports of good zero by UK
TOT_EXP_0_UK	total exports of good zero by UK
TOT_IMP_1_UK	total imports of good one by UK
TOT_EXP_1_UK	total exports of good one by UK
TOT_IMP_2_UK	total imports of good two by UK
TOT_EXP_2_UK	total exports of good two by UK
TOT_IMP_3_UK	total imports of good three by UK
TOT_EXP_3_UK	total exports of good three by UK
TOT_IMP_5_UK	total imports of good five by UK
TOT_EXP_5_UK	total exports of good five by UK
TOT_IMP_6_UK	total imports of good six by UK
TOT_EXP_6_UK	total exports of good six by UK
TOT_IMP_7_UK	total imports of good seven by UK
TOT_EXP_7_UK	total exports of good seven by UK
TOT_IMP_8_UK	total imports of good eight by UK
TOT_EXP_8_UK	total exports of good eight by UK
TOT_IMP_9_UK	total imports of good nine by UK
TOT_EXP_9_UK	total exports of good nine by UK
TARIFF_INC_UK	total tariff income for UK
X0IT	production good X0IT
X1IT	production good X1IT
X2IT	production good X2IT
X3IT	production good X3IT
X5IT	production good X5IT
X6IT	production good X6IT
X7IT	production good X7IT
X8IT	production good X8IT
X9IT	production good X9IT
WIT	production welfare
PX0IT	price good X0IT
PX1IT	price good X1IT
PX2IT	price good X2IT
PX3IT	price good X3IT
PX5IT	price good X5IT
PX6IT	price good X6IT
PX7IT	price good X7IT
PX8IT	price good X8IT
PX9IT	price good X9IT
PWIT	price per unit welfare
PLIT	price per unit labor
PKIT	price per unit capital
CONSIT	total income of household
X0NL_IT	import of good 0 by IT from NL
X1NL_IT	import of good 1 by IT from NL
X2NL_IT	import of good 2 by IT from NL
X3NL_IT	import of good 3 by IT from NL

X5NL_IT	import of good 5 by IT from NL	X5US_IT	import of good 5 by IT from US
X6NL_IT	import of good 6 by IT from NL	X6US_IT	import of good 6 by IT from US
X7NL_IT	import of good 7 by IT from NL	X7US_IT	import of good 7 by IT from US
X8NL_IT	import of good 8 by IT from NL	X8US_IT	import of good 8 by IT from US
X9NL_IT	import of good 9 by IT from NL	X9US_IT	import of good 9 by IT from US
X0DE_IT	import of good 0 by IT from DE	TOT_IMP_0_IT	total imports of good zero by IT
X1DE_IT	import of good 1 by IT from DE	TOT_EXP_0_IT	total exports of good zero by IT
X2DE_IT	import of good 2 by IT from DE	TOT_IMP_1_IT	total imports of good one by IT
X3DE_IT	import of good 3 by IT from DE	TOT_EXP_1_IT	total exports of good one by IT
X5DE_IT	import of good 5 by IT from DE	TOT_IMP_2_IT	total imports of good two by IT
X6DE_IT	import of good 6 by IT from DE	TOT_EXP_2_IT	total exports of good two by IT
X7DE_IT	import of good 7 by IT from DE	TOT_IMP_3_IT	total imports of good three by IT
X8DE_IT	import of good 8 by IT from DE	TOT_EXP_3_IT	total exports of good three by IT
X9DE_IT	import of good 9 by IT from DE	TOT_IMP_5_IT	total imports of good five by IT
X0BE_IT	import of good 0 by IT from BE	TOT_EXP_5_IT	total exports of good five by IT
X1BE_IT	import of good 1 by IT from BE	TOT_IMP_6_IT	total imports of good six by IT
X2BE_IT	import of good 2 by IT from BE	TOT_EXP_6_IT	total exports of good six by IT
X3BE_IT	import of good 3 by IT from BE	TOT_IMP_7_IT	total imports of good seven by IT
X5BE_IT	import of good 5 by IT from BE	TOT_EXP_7_IT	total exports of good seven by IT
X6BE_IT	import of good 6 by IT from BE	TOT_IMP_8_IT	total imports of good eight by IT
X7BE_IT	import of good 7 by IT from BE	TOT_EXP_8_IT	total exports of good eight by IT
X8BE_IT	import of good 8 by IT from BE	TOT_IMP_9_IT	total imports of good nine by IT
X9BE_IT	import of good 9 by IT from BE	TOT_EXP_9_IT	total exports of good nine by IT
X0FR_IT	import of good 0 by IT from FR	TARIFF_INC_IT	total tariff income for IT
X1FR_IT	import of good 1 by IT from FR		
X2FR_IT	import of good 2 by IT from FR	X0CN	production good X0CN
X3FR_IT	import of good 3 by IT from FR	X1CN	production good X1CN
X5FR_IT	import of good 5 by IT from FR	X2CN	production good X2CN
X6FR_IT	import of good 6 by IT from FR	X3CN	production good X3CN
X7FR_IT	import of good 7 by IT from FR	X5CN	production good X5CN
X8FR_IT	import of good 8 by IT from FR	X6CN	production good X6CN
X9FR_IT	import of good 9 by IT from FR	X7CN	production good X7CN
X0UK_IT	import of good 0 by IT from UK	X8CN	production good X8CN
X1UK_IT	import of good 1 by IT from UK	X9CN	production good X9CN
X2UK_IT	import of good 2 by IT from UK	WCN	production welfare
X3UK_IT	import of good 3 by IT from UK	PX0CN	price good X0CN
X5UK_IT	import of good 5 by IT from UK	PX1CN	price good X1CN
X6UK_IT	import of good 6 by IT from UK	PX2CN	price good X2CN
X7UK_IT	import of good 7 by IT from UK	PX3CN	price good X3CN
X8UK_IT	import of good 8 by IT from UK	PX5CN	price good X5CN
X9UK_IT	import of good 9 by IT from UK	PX6CN	price good X6CN
X0CN_IT	import of good 0 by IT from CN	PX7CN	price good X7CN
X1CN_IT	import of good 1 by IT from CN	PX8CN	price good X8CN
X2CN_IT	import of good 2 by IT from CN	PX9CN	price good X9CN
X3CN_IT	import of good 3 by IT from CN	PWCN	price per unit welfare
X5CN_IT	import of good 5 by IT from CN	PLCN	price per unit labor
X6CN_IT	import of good 6 by IT from CN	PKCN	price per unit capital
X7CN_IT	import of good 7 by IT from CN	CONSCN	total income of household
X8CN_IT	import of good 8 by IT from CN	X0NL_CN	import of good 0 by CN from NL
X9CN_IT	import of good 9 by IT from CN	X1NL_CN	import of good 1 by CN from NL
X0JP_IT	import of good 0 by IT from JP	X2NL_CN	import of good 2 by CN from NL
X1JP_IT	import of good 1 by IT from JP	X3NL_CN	import of good 3 by CN from NL
X2JP_IT	import of good 2 by IT from JP	X5NL_CN	import of good 5 by CN from NL
X3JP_IT	import of good 3 by IT from JP	X6NL_CN	import of good 6 by CN from NL
X5JP_IT	import of good 5 by IT from JP	X7NL_CN	import of good 7 by CN from NL
X6JP_IT	import of good 6 by IT from JP	X8NL_CN	import of good 8 by CN from NL
X7JP_IT	import of good 7 by IT from JP	X9NL_CN	import of good 9 by CN from NL
X8JP_IT	import of good 8 by IT from JP	X0DE_CN	import of good 0 by CN from DE
X9JP_IT	import of good 9 by IT from JP	X1DE_CN	import of good 1 by CN from DE
X0US_IT	import of good 0 by IT from US	X2DE_CN	import of good 2 by CN from DE
X1US_IT	import of good 1 by IT from US	X3DE_CN	import of good 3 by CN from DE
X2US_IT	import of good 2 by IT from US	X5DE_CN	import of good 5 by CN from DE
X3US_IT	import of good 3 by IT from US	X6DE_CN	import of good 6 by CN from DE

X7DE_CN	import of good 7 by CN from DE	TOT_IMP_3_CN	total imports of good three by CN
X8DE_CN	import of good 8 by CN from DE	TOT_EXP_3_CN	total exports of good three by CN
X9DE_CN	import of good 9 by CN from DE	TOT_IMP_5_CN	total imports of good five by CN
X0BE_CN	import of good 0 by CN from BE	TOT_EXP_5_CN	total exports of good five by CN
X1BE_CN	import of good 1 by CN from BE	TOT_IMP_6_CN	total imports of good six by CN
X2BE_CN	import of good 2 by CN from BE	TOT_EXP_6_CN	total exports of good six by CN
X3BE_CN	import of good 3 by CN from BE	TOT_IMP_7_CN	total imports of good seven by CN
X5BE_CN	import of good 5 by CN from BE	TOT_EXP_7_CN	total exports of good seven by CN
X6BE_CN	import of good 6 by CN from BE	TOT_IMP_8_CN	total imports of good eight by CN
X7BE_CN	import of good 7 by CN from BE	TOT_EXP_8_CN	total exports of good eight by CN
X8BE_CN	import of good 8 by CN from BE	TOT_IMP_9_CN	total imports of good nine by CN
X9BE_CN	import of good 9 by CN from BE	TOT_EXP_9_CN	total exports of good nine by CN
X0FR_CN	import of good 0 by CN from FR	TARIFF_INC_CN	total tariff income for CN
X1FR_CN	import of good 1 by CN from FR		
X2FR_CN	import of good 2 by CN from FR	X0JP	production good X0JP
X3FR_CN	import of good 3 by CN from FR	X1JP	production good X1JP
X5FR_CN	import of good 5 by CN from FR	X2JP	production good X2JP
X6FR_CN	import of good 6 by CN from FR	X3JP	production good X3JP
X7FR_CN	import of good 7 by CN from FR	X5JP	production good X5JP
X8FR_CN	import of good 8 by CN from FR	X6JP	production good X6JP
X9FR_CN	import of good 9 by CN from FR	X7JP	production good X7JP
X0UK_CN	import of good 0 by CN from UK	X8JP	production good X8JP
X1UK_CN	import of good 1 by CN from UK	X9JP	production good X9JP
X2UK_CN	import of good 2 by CN from UK	WJP	production welfare
X3UK_CN	import of good 3 by CN from UK	PX0JP	price good X0JP
X5UK_CN	import of good 5 by CN from UK	PX1JP	price good X1JP
X6UK_CN	import of good 6 by CN from UK	PX2JP	price good X2JP
X7UK_CN	import of good 7 by CN from UK	PX3JP	price good X3JP
X8UK_CN	import of good 8 by CN from UK	PX5JP	price good X5JP
X9UK_CN	import of good 9 by CN from UK	PX6JP	price good X6JP
X0IT_CN	import of good 0 by CN from IT	PX7JP	price good X7JP
X1IT_CN	import of good 1 by CN from IT	PX8JP	price good X8JP
X2IT_CN	import of good 2 by CN from IT	PX9JP	price good X9JP
X3IT_CN	import of good 3 by CN from IT	PWJP	price per unit welfare
X5IT_CN	import of good 5 by CN from IT	PLJP	price per unit labor
X6IT_CN	import of good 6 by CN from IT	PKJP	price per unit capital
X7IT_CN	import of good 7 by CN from IT	CONSJP	total income of household
X8IT_CN	import of good 8 by CN from IT	X0NL_JP	import of good 0 by JP from NL
X9IT_CN	import of good 9 by CN from IT	X1NL_JP	import of good 1 by JP from NL
X0JP_CN	import of good 0 by CN from JP	X2NL_JP	import of good 2 by JP from NL
X1JP_CN	import of good 1 by CN from JP	X3NL_JP	import of good 3 by JP from NL
X2JP_CN	import of good 2 by CN from JP	X5NL_JP	import of good 5 by JP from NL
X3JP_CN	import of good 3 by CN from JP	X6NL_JP	import of good 6 by JP from NL
X5JP_CN	import of good 5 by CN from JP	X7NL_JP	import of good 7 by JP from NL
X6JP_CN	import of good 6 by CN from JP	X8NL_JP	import of good 8 by JP from NL
X7JP_CN	import of good 7 by CN from JP	X9NL_JP	import of good 9 by JP from NL
X8JP_CN	import of good 8 by CN from JP	X0DE_JP	import of good 0 by JP from DE
X9JP_CN	import of good 9 by CN from JP	X1DE_JP	import of good 1 by JP from DE
X0US_CN	import of good 0 by CN from US	X2DE_JP	import of good 2 by JP from DE
X1US_CN	import of good 1 by CN from US	X3DE_JP	import of good 3 by JP from DE
X2US_CN	import of good 2 by CN from US	X5DE_JP	import of good 5 by JP from DE
X3US_CN	import of good 3 by CN from US	X6DE_JP	import of good 6 by JP from DE
X5US_CN	import of good 5 by CN from US	X7DE_JP	import of good 7 by JP from DE
X6US_CN	import of good 6 by CN from US	X8DE_JP	import of good 8 by JP from DE
X7US_CN	import of good 7 by CN from US	X9DE_JP	import of good 9 by JP from DE
X8US_CN	import of good 8 by CN from US	X0BE_JP	import of good 0 by JP from BE
X9US_CN	import of good 9 by CN from US	X1BE_JP	import of good 1 by JP from BE
TOT_IMP_0_CN	total imports of good zero by CN	X2BE_JP	import of good 2 by JP from BE
TOT_EXP_0_CN	total exports of good zero by CN	X3BE_JP	import of good 3 by JP from BE
TOT_IMP_1_CN	total imports of good one by CN	X5BE_JP	import of good 5 by JP from BE
TOT_EXP_1_CN	total exports of good one by CN	X6BE_JP	import of good 6 by JP from BE
TOT_IMP_2_CN	total imports of good two by CN	X7BE_JP	import of good 7 by JP from BE
TOT_EXP_2_CN	total exports of good two by CN	X8BE_JP	import of good 8 by JP from BE

X9BE_JP	import of good 9 by JP from BE
X0FR_JP	import of good 0 by JP from FR
X1FR_JP	import of good 1 by JP from FR
X2FR_JP	import of good 2 by JP from FR
X3FR_JP	import of good 3 by JP from FR
X5FR_JP	import of good 5 by JP from FR
X6FR_JP	import of good 6 by JP from FR
X7FR_JP	import of good 7 by JP from FR
X8FR_JP	import of good 8 by JP from FR
X9FR_JP	import of good 9 by JP from FR
X0UK_JP	import of good 0 by JP from UK
X1UK_JP	import of good 1 by JP from UK
X2UK_JP	import of good 2 by JP from UK
X3UK_JP	import of good 3 by JP from UK
X5UK_JP	import of good 5 by JP from UK
X6UK_JP	import of good 6 by JP from UK
X7UK_JP	import of good 7 by JP from UK
X8UK_JP	import of good 8 by JP from UK
X9UK_JP	import of good 9 by JP from UK
X0IT_JP	import of good 0 by JP from IT
X1IT_JP	import of good 1 by JP from IT
X2IT_JP	import of good 2 by JP from IT
X3IT_JP	import of good 3 by JP from IT
X5IT_JP	import of good 5 by JP from IT
X6IT_JP	import of good 6 by JP from IT
X7IT_JP	import of good 7 by JP from IT
X8IT_JP	import of good 8 by JP from IT
X9IT_JP	import of good 9 by JP from IT
X0CN_JP	import of good 0 by JP from CN
X1CN_JP	import of good 1 by JP from CN
X2CN_JP	import of good 2 by JP from CN
X3CN_JP	import of good 3 by JP from CN
X5CN_JP	import of good 5 by JP from CN
X6CN_JP	import of good 6 by JP from CN
X7CN_JP	import of good 7 by JP from CN
X8CN_JP	import of good 8 by JP from CN
X9CN_JP	import of good 9 by JP from CN
X0US_JP	import of good 0 by JP from US
X1US_JP	import of good 1 by JP from US
X2US_JP	import of good 2 by JP from US
X3US_JP	import of good 3 by JP from US
X5US_JP	import of good 5 by JP from US
X6US_JP	import of good 6 by JP from US
X7US_JP	import of good 7 by JP from US
X8US_JP	import of good 8 by JP from US
X9US_JP	import of good 9 by JP from US
TOT_IMP_0_JP	total imports of good zero by JP
TOT_EXP_0_JP	total exports of good zero by JP
TOT_IMP_1_JP	total imports of good one by JP
TOT_EXP_1_JP	total exports of good one by JP
TOT_IMP_2_JP	total imports of good two by JP
TOT_EXP_2_JP	total exports of good two by JP
TOT_IMP_3_JP	total imports of good three by JP
TOT_EXP_3_JP	total exports of good three by JP
TOT_IMP_5_JP	total imports of good five by JP
TOT_EXP_5_JP	total exports of good five by JP
TOT_IMP_6_JP	total imports of good six by JP
TOT_EXP_6_JP	total exports of good six by JP
TOT_IMP_7_JP	total imports of good seven by JP
TOT_EXP_7_JP	total exports of good seven by JP
TOT_IMP_8_JP	total imports of good eight by JP
TOT_EXP_8_JP	total exports of good eight by JP
TOT_IMP_9_JP	total imports of good nine by JP

TOT_EXP_9_JP	total exports of good nine by JP
TARIFF_INC_JP	total tariff income for JP
X0US	production good X0US
X1US	production good X1US
X2US	production good X2US
X3US	production good X3US
X5US	production good X5US
X6US	production good X6US
X7US	production good X7US
X8US	production good X8US
X9US	production good X9US
WUS	production welfare
PX0US	price good X0US
PX1US	price good X1US
PX2US	price good X2US
PX3US	price good X3US
PX5US	price good X5US
PX6US	price good X6US
PX7US	price good X7US
PX8US	price good X8US
PX9US	price good X9US
PWUS	price per unit welfare
PLUS	price per unit labor
PKUS	price per unit capital
CONSUS	total income of household
X0NL_US	import of good 0 by US from NL
X1NL_US	import of good 1 by US from NL
X2NL_US	import of good 2 by US from NL
X3NL_US	import of good 3 by US from NL
X5NL_US	import of good 5 by US from NL
X6NL_US	import of good 6 by US from NL
X7NL_US	import of good 7 by US from NL
X8NL_US	import of good 8 by US from NL
X9NL_US	import of good 9 by US from NL
X0DE_US	import of good 0 by US from DE
X1DE_US	import of good 1 by US from DE
X2DE_US	import of good 2 by US from DE
X3DE_US	import of good 3 by US from DE
X5DE_US	import of good 5 by US from DE
X6DE_US	import of good 6 by US from DE
X7DE_US	import of good 7 by US from DE
X8DE_US	import of good 8 by US from DE
X9DE_US	import of good 9 by US from DE
X0BE_US	import of good 0 by US from BE
X1BE_US	import of good 1 by US from BE
X2BE_US	import of good 2 by US from BE
X3BE_US	import of good 3 by US from BE
X5BE_US	import of good 5 by US from BE
X6BE_US	import of good 6 by US from BE
X7BE_US	import of good 7 by US from BE
X8BE_US	import of good 8 by US from BE
X9BE_US	import of good 9 by US from BE
X0FR_US	import of good 0 by US from FR
X1FR_US	import of good 1 by US from FR
X2FR_US	import of good 2 by US from FR
X3FR_US	import of good 3 by US from FR
X5FR_US	import of good 5 by US from FR
X6FR_US	import of good 6 by US from FR
X7FR_US	import of good 7 by US from FR
X8FR_US	import of good 8 by US from FR
X9FR_US	import of good 9 by US from FR
X0UK_US	import of good 0 by US from UK

X1UK_US	import of good 1 by US from UK	NET_EXP_8_NL	net exports of good eight by NL
X2UK_US	import of good 2 by US from UK	NET_EXP_9_NL	net exports of good nine by NL
X3UK_US	import of good 3 by US from UK	NET_EXP_0_DE	net exports of good zero by DE
X5UK_US	import of good 5 by US from UK	NET_EXP_1_DE	net exports of good one by DE
X6UK_US	import of good 6 by US from UK	NET_EXP_2_DE	net exports of good two by DE
X7UK_US	import of good 7 by US from UK	NET_EXP_3_DE	net exports of good three by DE
X8UK_US	import of good 8 by US from UK	NET_EXP_5_DE	net exports of good five by DE
X9UK_US	import of good 9 by US from UK	NET_EXP_6_DE	net exports of good six by DE
X0IT_US	import of good 0 by US from IT	NET_EXP_7_DE	net exports of good seven by DE
X1IT_US	import of good 1 by US from IT	NET_EXP_8_DE	net exports of good eight by DE
X2IT_US	import of good 2 by US from IT	NET_EXP_9_DE	net exports of good nine by DE
X3IT_US	import of good 3 by US from IT	NET_EXP_0_BE	net exports of good zero by BE
X5IT_US	import of good 5 by US from IT	NET_EXP_1_BE	net exports of good one by BE
X6IT_US	import of good 6 by US from IT	NET_EXP_2_BE	net exports of good two by BE
X7IT_US	import of good 7 by US from IT	NET_EXP_3_BE	net exports of good three by BE
X8IT_US	import of good 8 by US from IT	NET_EXP_5_BE	net exports of good five by BE
X9IT_US	import of good 9 by US from IT	NET_EXP_6_BE	net exports of good six by BE
X0CN_US	import of good 0 by US from CN	NET_EXP_7_BE	net exports of good seven by BE
X1CN_US	import of good 1 by US from CN	NET_EXP_8_BE	net exports of good eight by BE
X2CN_US	import of good 2 by US from CN	NET_EXP_9_BE	net exports of good nine by BE
X3CN_US	import of good 3 by US from CN	NET_EXP_0_FR	net exports of good zero by FR
X5CN_US	import of good 5 by US from CN	NET_EXP_1_FR	net exports of good one by FR
X6CN_US	import of good 6 by US from CN	NET_EXP_2_FR	net exports of good two by FR
X7CN_US	import of good 7 by US from CN	NET_EXP_3_FR	net exports of good three by FR
X8CN_US	import of good 8 by US from CN	NET_EXP_5_FR	net exports of good five by FR
X9CN_US	import of good 9 by US from CN	NET_EXP_6_FR	net exports of good six by FR
X0JP_US	import of good 0 by US from JP	NET_EXP_7_FR	net exports of good seven by FR
X1JP_US	import of good 1 by US from JP	NET_EXP_8_FR	net exports of good eight by FR
X2JP_US	import of good 2 by US from JP	NET_EXP_9_FR	net exports of good nine by FR
X3JP_US	import of good 3 by US from JP	NET_EXP_0_UK	net exports of good zero by UK
X5JP_US	import of good 5 by US from JP	NET_EXP_1_UK	net exports of good one by UK
X6JP_US	import of good 6 by US from JP	NET_EXP_2_UK	net exports of good two by UK
X7JP_US	import of good 7 by US from JP	NET_EXP_3_UK	net exports of good three by UK
X8JP_US	import of good 8 by US from JP	NET_EXP_5_UK	net exports of good five by UK
X9JP_US	import of good 9 by US from JP	NET_EXP_6_UK	net exports of good six by UK
TOT_IMP_0_US	total imports of good zero by US	NET_EXP_7_UK	net exports of good seven by UK
TOT_EXP_0_US	total exports of good zero by US	NET_EXP_8_UK	net exports of good eight by UK
TOT_IMP_1_US	total imports of good one by US	NET_EXP_9_UK	net exports of good nine by UK
TOT_EXP_1_US	total exports of good one by US	NET_EXP_0_IT	net exports of good zero by IT
TOT_IMP_2_US	total imports of good two by US	NET_EXP_1_IT	net exports of good one by IT
TOT_EXP_2_US	total exports of good two by US	NET_EXP_2_IT	net exports of good two by IT
TOT_IMP_3_US	total imports of good three by US	NET_EXP_3_IT	net exports of good three by IT
TOT_EXP_3_US	total exports of good three by US	NET_EXP_5_IT	net exports of good five by IT
TOT_IMP_5_US	total imports of good five by US	NET_EXP_6_IT	net exports of good six by IT
TOT_EXP_5_US	total exports of good five by US	NET_EXP_7_IT	net exports of good seven by IT
TOT_IMP_6_US	total imports of good six by US	NET_EXP_8_IT	net exports of good eight by IT
TOT_EXP_6_US	total exports of good six by US	NET_EXP_9_IT	net exports of good nine by IT
TOT_IMP_7_US	total imports of good seven by US	NET_EXP_0_CN	net exports of good zero by CN
TOT_EXP_7_US	total exports of good seven by US	NET_EXP_1_CN	net exports of good one by CN
TOT_IMP_8_US	total imports of good eight by US	NET_EXP_2_CN	net exports of good two by CN
TOT_EXP_8_US	total exports of good eight by US	NET_EXP_3_CN	net exports of good three by CN
TOT_IMP_9_US	total imports of good nine by US	NET_EXP_5_CN	net exports of good five by CN
TOT_EXP_9_US	total exports of good nine by US	NET_EXP_6_CN	net exports of good six by CN
TARIFF_INC_US	total tariff income for US	NET_EXP_7_CN	net exports of good seven by CN
		NET_EXP_8_CN	net exports of good eight by CN
VARIABLES		NET_EXP_9_CN	net exports of good nine by CN
NET_EXP_0_NL	net exports of good zero by NL	NET_EXP_0_JP	net exports of good zero by JP
NET_EXP_1_NL	net exports of good one by NL	NET_EXP_1_JP	net exports of good one by JP
NET_EXP_2_NL	net exports of good two by NL	NET_EXP_2_JP	net exports of good two by JP
NET_EXP_3_NL	net exports of good three by NL	NET_EXP_3_JP	net exports of good three by JP
NET_EXP_5_NL	net exports of good five by NL	NET_EXP_5_JP	net exports of good five by JP
NET_EXP_6_NL	net exports of good six by NL	NET_EXP_6_JP	net exports of good six by JP
NET_EXP_7_NL	net exports of good seven by NL	NET_EXP_7_JP	net exports of good seven by JP

NET_EXP_8_JP   net exports of good eight by JP
NET_EXP_9_JP   net exports of good nine by JP
NET_EXP_0_US   net exports of good zero by US
NET_EXP_1_US   net exports of good one by US
NET_EXP_2_US   net exports of good two by US
NET_EXP_3_US   net exports of good three by US
NET_EXP_5_US   net exports of good five by US
NET_EXP_6_US   net exports of good six by US
NET_EXP_7_US   net exports of good seven by US
NET_EXP_8_US   net exports of good eight by US
NET_EXP_9_US   net exports of good nine by US;

EQUATIONS
PRF_X0NL   zero profit condition for good X0NL
PRF_X1NL   zero profit condition for good X1NL
PRF_X2NL   zero profit condition for good X2NL
PRF_X3NL   zero profit condition for good X3NL
PRF_X5NL   zero profit condition for good X5NL
PRF_X6NL   zero profit condition for good X6NL
PRF_X7NL   zero profit condition for good X7NL
PRF_X8NL   zero profit condition for good X8NL
PRF_X9NL   zero profit condition for good X9NL
PRF_WNL   definition of the expenditure function
MKT_X0NL   equilibrium for the market of good X0NL
MKT_X1NL   equilibrium for the market of good X1NL
MKT_X2NL   equilibrium for the market of good X2NL
MKT_X3NL   equilibrium for the market of good X3NL
MKT_X5NL   equilibrium for the market of good X5NL
MKT_X6NL   equilibrium for the market of good X6NL
MKT_X7NL   equilibrium for the market of good X7NL
MKT_X8NL   equilibrium for the market of good X8NL
MKT_X9NL   equilibrium for the market of good X9NL
MKT_LNL   equilibrium for labor market
MKT_KNL   equilibrium for capital market
MKT_WNL   this equation determines the welfare level
I_CONSNL   definition of income
I_TOT_IMP_0_NL cumulative imports good zero
I_TOT_EXP_0_NL cumulative exports good zero
I_NET_EXP_0_NL net exports good zero
I_TOT_IMP_1_NL cumulative imports good one
I_TOT_EXP_1_NL cumulative exports good one
I_NET_EXP_1_NL net exports good one
I_TOT_IMP_2_NL cumulative imports good two
I_TOT_EXP_2_NL cumulative exports good two
I_NET_EXP_2_NL net exports good two
I_TOT_IMP_3_NL cumulative imports good three
I_TOT_EXP_3_NL cumulative exports good three
I_NET_EXP_3_NL net exports good three
I_TOT_IMP_5_NL cumulative imports good five
I_TOT_EXP_5_NL cumulative exports good five
I_NET_EXP_5_NL net exports good five
I_TOT_IMP_6_NL cumulative imports good six
I_TOT_EXP_6_NL cumulative exports good six
I_NET_EXP_6_NL net exports good six
I_TOT_IMP_7_NL cumulative imports good seven
I_TOT_EXP_7_NL cumulative exports good seven
I_NET_EXP_7_NL net exports good seven
I_TOT_IMP_8_NL cumulative imports good eight
I_TOT_EXP_8_NL cumulative exports good eight
I_NET_EXP_8_NL net exports good eight
I_TOT_IMP_9_NL cumulative imports good nine
I_TOT_EXP_9_NL cumulative exports good nine
I_NET_EXP_9_NL net exports good nine

I_TARIFF_INC_NL tariff income NL

PRF_X0DE   zero profit condition for good X0DE
PRF_X1DE   zero profit condition for good X1DE
PRF_X2DE   zero profit condition for good X2DE
PRF_X3DE   zero profit condition for good X3DE
PRF_X5DE   zero profit condition for good X5DE
PRF_X6DE   zero profit condition for good X6DE
PRF_X7DE   zero profit condition for good X7DE
PRF_X8DE   zero profit condition for good X8DE
PRF_X9DE   zero profit condition for good X9DE
PRF_WDE   definition of the expenditure function
MKT_X0DE   equilibrium for the market of good X0DE
MKT_X1DE   equilibrium for the market of good X1DE
MKT_X2DE   equilibrium for the market of good X2DE
MKT_X3DE   equilibrium for the market of good X3DE
MKT_X5DE   equilibrium for the market of good X5DE
MKT_X6DE   equilibrium for the market of good X6DE
MKT_X7DE   equilibrium for the market of good X7DE
MKT_X8DE   equilibrium for the market of good X8DE
MKT_X9DE   equilibrium for the market of good X9DE
MKT_LDE   equilibrium for labor market
MKT_KDE   equilibrium for capital market
MKT_WDE   this equation determines the welfare level
I_CONSDE   definition of income
I_TOT_IMP_0_DE cumulative imports good zero
I_TOT_EXP_0_DE cumulative exports good zero
I_NET_EXP_0_DE net exports good zero
I_TOT_IMP_1_DE cumulative imports good one
I_TOT_EXP_1_DE cumulative exports good one
I_NET_EXP_1_DE net exports good one
I_TOT_IMP_2_DE cumulative imports good two
I_TOT_EXP_2_DE cumulative exports good two
I_NET_EXP_2_DE net exports good two
I_TOT_IMP_3_DE cumulative imports good three
I_TOT_EXP_3_DE cumulative exports good three
I_NET_EXP_3_DE net exports good three
I_TOT_IMP_5_DE cumulative imports good five
I_TOT_EXP_5_DE cumulative exports good five
I_NET_EXP_5_DE net exports good five
I_TOT_IMP_6_DE cumulative imports good six
I_TOT_EXP_6_DE cumulative exports good six
I_NET_EXP_6_DE net exports good six
I_TOT_IMP_7_DE cumulative imports good seven
I_TOT_EXP_7_DE cumulative exports good seven
I_NET_EXP_7_DE net exports good seven
I_TOT_IMP_8_DE cumulative imports good eight
I_TOT_EXP_8_DE cumulative exports good eight
I_NET_EXP_8_DE net exports good eight
I_TOT_IMP_9_DE cumulative imports good nine
I_TOT_EXP_9_DE cumulative exports good nine
I_NET_EXP_9_DE net exports good nine
I_TARIFF_INC_DE tariff income DE

PRF_X0BE   zero profit condition for good X0BE
PRF_X1BE   zero profit condition for good X1BE
PRF_X2BE   zero profit condition for good X2BE
PRF_X3BE   zero profit condition for good X3BE
PRF_X5BE   zero profit condition for good X5BE
PRF_X6BE   zero profit condition for good X6BE
PRF_X7BE   zero profit condition for good X7BE
PRF_X8BE   zero profit condition for good X8BE
PRF_X9BE   zero profit condition for good X9BE

PRF_WBE   definition of the expenditure function
MKT_X0BE   equilibrium for the market of good X0BE
MKT_X1BE   equilibrium for the market of good X1BE
MKT_X2BE   equilibrium for the market of good X2BE
MKT_X3BE   equilibrium for the market of good X3BE
MKT_X5BE   equilibrium for the market of good X5BE
MKT_X6BE   equilibrium for the market of good X6BE
MKT_X7BE   equilibrium for the market of good X7BE
MKT_X8BE   equilibrium for the market of good X8BE
MKT_X9BE   equilibrium for the market of good X9BE
MKT_LBE   equilibrium for labor market
MKT_KBE   equilibrium for capital market
MKT_WBE   this equation determines the welfare level
I_CONSBE   definition of income
I_TOT_IMP_0_BE cumulative imports good zero
I_TOT_EXP_0_BE cumulative exports good zero
I_NET_EXP_0_BE net exports good zero
I_TOT_IMP_1_BE cumulative imports good one
I_TOT_EXP_1_BE cumulative exports good one
I_NET_EXP_1_BE net exports good one
I_TOT_IMP_2_BE cumulative imports good two
I_TOT_EXP_2_BE cumulative exports good two
I_NET_EXP_2_BE net exports good two
I_TOT_IMP_3_BE cumulative imports good three
I_TOT_EXP_3_BE cumulative exports good three
I_NET_EXP_3_BE net exports good three
I_TOT_IMP_5_BE cumulative imports good five
I_TOT_EXP_5_BE cumulative exports good five
I_NET_EXP_5_BE net exports good five
I_TOT_IMP_6_BE cumulative imports good six
I_TOT_EXP_6_BE cumulative exports good six
I_NET_EXP_6_BE net exports good six
I_TOT_IMP_7_BE cumulative imports good seven
I_TOT_EXP_7_BE cumulative exports good seven
I_NET_EXP_7_BE net exports good seven
I_TOT_IMP_8_BE cumulative imports good eight
I_TOT_EXP_8_BE cumulative exports good eight
I_NET_EXP_8_BE net exports good eight
I_TOT_IMP_9_BE cumulative imports good nine
I_TOT_EXP_9_BE cumulative exports good nine
I_NET_EXP_9_BE net exports good nine
I_TARIFF_INC_BE tariff income BE

PRF_X0FR   zero profit condition for good X0FR
PRF_X1FR   zero profit condition for good X1FR
PRF_X2FR   zero profit condition for good X2FR
PRF_X3FR   zero profit condition for good X3FR
PRF_X5FR   zero profit condition for good X5FR
PRF_X6FR   zero profit condition for good X6FR
PRF_X7FR   zero profit condition for good X7FR
PRF_X8FR   zero profit condition for good X8FR
PRF_X9FR   zero profit condition for good X9FR
PRF_WFR   definition of the expenditure function
MKT_X0FR   equilibrium for the market of good X0FR
MKT_X1FR   equilibrium for the market of good X1FR
MKT_X2FR   equilibrium for the market of good X2FR
MKT_X3FR   equilibrium for the market of good X3FR
MKT_X5FR   equilibrium for the market of good X5FR
MKT_X6FR   equilibrium for the market of good X6FR
MKT_X7FR   equilibrium for the market of good X7FR
MKT_X8FR   equilibrium for the market of good X8FR
MKT_X9FR   equilibrium for the market of good X9FR
MKT_LFR   equilibrium for labor market

MKT_KFR   equilibrium for capital market
MKT_WFR   this equation determines the welfare level
I_CONSFR   definition of income
I_TOT_IMP_0_FR cumulative imports good zero
I_TOT_EXP_0_FR cumulative exports good zero
I_NET_EXP_0_FR net exports good zero
I_TOT_IMP_1_FR cumulative imports good one
I_TOT_EXP_1_FR cumulative exports good one
I_NET_EXP_1_FR net exports good one
I_TOT_IMP_2_FR cumulative imports good two
I_TOT_EXP_2_FR cumulative exports good two
I_NET_EXP_2_FR net exports good two
I_TOT_IMP_3_FR cumulative imports good three
I_TOT_EXP_3_FR cumulative exports good three
I_NET_EXP_3_FR net exports good three
I_TOT_IMP_5_FR cumulative imports good five
I_TOT_EXP_5_FR cumulative exports good five
I_NET_EXP_5_FR net exports good five
I_TOT_IMP_6_FR cumulative imports good six
I_TOT_EXP_6_FR cumulative exports good six
I_NET_EXP_6_FR net exports good six
I_TOT_IMP_7_FR cumulative imports good seven
I_TOT_EXP_7_FR cumulative exports good seven
I_NET_EXP_7_FR net exports good seven
I_TOT_IMP_8_FR cumulative imports good eight
I_TOT_EXP_8_FR cumulative exports good eight
I_NET_EXP_8_FR net exports good eight
I_TOT_IMP_9_FR cumulative imports good nine
I_TOT_EXP_9_FR cumulative exports good nine
I_NET_EXP_9_FR net exports good nine
I_TARIFF_INC_FR tariff income FR

PRF_X0UK   zero profit condition for good X0UK
PRF_X1UK   zero profit condition for good X1UK
PRF_X2UK   zero profit condition for good X2UK
PRF_X3UK   zero profit condition for good X3UK
PRF_X5UK   zero profit condition for good X5UK
PRF_X6UK   zero profit condition for good X6UK
PRF_X7UK   zero profit condition for good X7UK
PRF_X8UK   zero profit condition for good X8UK
PRF_X9UK   zero profit condition for good X9UK
PRF_WUK   definition of the expenditure function
MKT_X0UK   equilibrium for the market of good X0UK
MKT_X1UK   equilibrium for the market of good X1UK
MKT_X2UK   equilibrium for the market of good X2UK
MKT_X3UK   equilibrium for the market of good X3UK
MKT_X5UK   equilibrium for the market of good X5UK
MKT_X6UK   equilibrium for the market of good X6UK
MKT_X7UK   equilibrium for the market of good X7UK
MKT_X8UK   equilibrium for the market of good X8UK
MKT_X9UK   equilibrium for the market of good X9UK
MKT_LUK   equilibrium for labor market
MKT_KUK   equilibrium for capital market
MKT_WUK   this equation determines the welfare level
I_CONSUK   definition of income
I_TOT_IMP_0_UK cumulative imports good zero
I_TOT_EXP_0_UK cumulative exports good zero
I_NET_EXP_0_UK net exports good zero
I_TOT_IMP_1_UK cumulative imports good one
I_TOT_EXP_1_UK cumulative exports good one
I_NET_EXP_1_UK net exports good one
I_TOT_IMP_2_UK cumulative imports good two
I_TOT_EXP_2_UK cumulative exports good two

I_NET_EXP_2_UK net exports good two
I_TOT_IMP_3_UK cumulative imports good three
I_TOT_EXP_3_UK cumulative exports good three
I_NET_EXP_3_UK net exports good three
I_TOT_IMP_5_UK cumulative imports good five
I_TOT_EXP_5_UK cumulative exports good five
I_NET_EXP_5_UK net exports good five
I_TOT_IMP_6_UK cumulative imports good six
I_TOT_EXP_6_UK cumulative exports good six
I_NET_EXP_6_UK net exports good six
I_TOT_IMP_7_UK cumulative imports good seven
I_TOT_EXP_7_UK cumulative exports good seven
I_NET_EXP_7_UK net exports good seven
I_TOT_IMP_8_UK cumulative imports good eight
I_TOT_EXP_8_UK cumulative exports good eight
I_NET_EXP_8_UK net exports good eight
I_TOT_IMP_9_UK cumulative imports good nine
I_TOT_EXP_9_UK cumulative exports good nine
I_NET_EXP_9_UK net exports good nine
I_TARIFF_INC_UK tariff income UK

PRF_X0IT   zero profit condition for good X0IT
PRF_X1IT   zero profit condition for good X1IT
PRF_X2IT   zero profit condition for good X2IT
PRF_X3IT   zero profit condition for good X3IT
PRF_X5IT   zero profit condition for good X5IT
PRF_X6IT   zero profit condition for good X6IT
PRF_X7IT   zero profit condition for good X7IT
PRF_X8IT   zero profit condition for good X8IT
PRF_X9IT   zero profit condition for good X9IT
PRF_WIT   definition of the expenditure function
MKT_X0IT   equilibrium for the market of good X0IT
MKT_X1IT   equilibrium for the market of good X1IT
MKT_X2IT   equilibrium for the market of good X2IT
MKT_X3IT   equilibrium for the market of good X3IT
MKT_X5IT   equilibrium for the market of good X5IT
MKT_X6IT   equilibrium for the market of good X6IT
MKT_X7IT   equilibrium for the market of good X7IT
MKT_X8IT   equilibrium for the market of good X8IT
MKT_X9IT   equilibrium for the market of good X9IT
MKT_LIT   equilibrium for labor market
MKT_KIT   equilibrium for capital market
MKT_WIT   this equation determines the welfare level
I_CONSIT   definition of income
I_TOT_IMP_0_IT cumulative imports good zero
I_TOT_EXP_0_IT cumulative exports good zero
I_NET_EXP_0_IT net exports good zero
I_TOT_IMP_1_IT cumulative imports good one
I_TOT_EXP_1_IT cumulative exports good one
I_NET_EXP_1_IT net exports good one
I_TOT_IMP_2_IT cumulative imports good two
I_TOT_EXP_2_IT cumulative exports good two
I_NET_EXP_2_IT net exports good two
I_TOT_IMP_3_IT cumulative imports good three
I_TOT_EXP_3_IT cumulative exports good three
I_NET_EXP_3_IT net exports good three
I_TOT_IMP_5_IT cumulative imports good five
I_TOT_EXP_5_IT cumulative exports good five
I_NET_EXP_5_IT net exports good five
I_TOT_IMP_6_IT cumulative imports good six
I_TOT_EXP_6_IT cumulative exports good six
I_NET_EXP_6_IT net exports good six
I_TOT_IMP_7_IT cumulative imports good seven

I_TOT_EXP_7_IT cumulative exports good seven
I_NET_EXP_7_IT net exports good seven
I_TOT_IMP_8_IT cumulative imports good eight
I_TOT_EXP_8_IT cumulative exports good eight
I_NET_EXP_8_IT net exports good eight
I_TOT_IMP_9_IT cumulative imports good nine
I_TOT_EXP_9_IT cumulative exports good nine
I_NET_EXP_9_IT net exports good nine
I_TARIFF_INC_IT tariff income IT

PRF_X0CN   zero profit condition for good X0CN
PRF_X1CN   zero profit condition for good X1CN
PRF_X2CN   zero profit condition for good X2CN
PRF_X3CN   zero profit condition for good X3CN
PRF_X5CN   zero profit condition for good X5CN
PRF_X6CN   zero profit condition for good X6CN
PRF_X7CN   zero profit condition for good X7CN
PRF_X8CN   zero profit condition for good X8CN
PRF_X9CN   zero profit condition for good X9CN
PRF_WCN   definition of the expenditure function
MKT_X0CN   equilibrium for the market of good X0CN
MKT_X1CN   equilibrium for the market of good X1CN
MKT_X2CN   equilibrium for the market of good X2CN
MKT_X3CN   equilibrium for the market of good X3CN
MKT_X5CN   equilibrium for the market of good X5CN
MKT_X6CN   equilibrium for the market of good X6CN
MKT_X7CN   equilibrium for the market of good X7CN
MKT_X8CN   equilibrium for the market of good X8CN
MKT_X9CN   equilibrium for the market of good X9CN
MKT_LCN   equilibrium for labor market
MKT_KCN   equilibrium for capital market
MKT_WCN   this equation determines the welfare level
I_CONSCN   definition of income
I_TOT_IMP_0_CN cumulative imports good zero
I_TOT_EXP_0_CN cumulative exports good zero
I_NET_EXP_0_CN net exports good zero
I_TOT_IMP_1_CN cumulative imports good one
I_TOT_EXP_1_CN cumulative exports good one
I_NET_EXP_1_CN net exports good one
I_TOT_IMP_2_CN cumulative imports good two
I_TOT_EXP_2_CN cumulative exports good two
I_NET_EXP_2_CN net exports good two
I_TOT_IMP_3_CN cumulative imports good three
I_TOT_EXP_3_CN cumulative exports good three
I_NET_EXP_3_CN net exports good three
I_TOT_IMP_5_CN cumulative imports good five
I_TOT_EXP_5_CN cumulative exports good five
I_NET_EXP_5_CN net exports good five
I_TOT_IMP_6_CN cumulative imports good six
I_TOT_EXP_6_CN cumulative exports good six
I_NET_EXP_6_CN net exports good six
I_TOT_IMP_7_CN cumulative imports good seven
I_TOT_EXP_7_CN cumulative exports good seven
I_NET_EXP_7_CN net exports good seven
I_TOT_IMP_8_CN cumulative imports good eight
I_TOT_EXP_8_CN cumulative exports good eight
I_NET_EXP_8_CN net exports good eight
I_TOT_IMP_9_CN cumulative imports good nine
I_TOT_EXP_9_CN cumulative exports good nine
I_NET_EXP_9_CN net exports good nine
I_TARIFF_INC_CN tariff income CN

PRF_X0JP   zero profit condition for good X0JP

PRF_X1JP	zero profit condition for good X1JP
PRF_X2JP	zero profit condition for good X2JP
PRF_X3JP	zero profit condition for good X3JP
PRF_X5JP	zero profit condition for good X5JP
PRF_X6JP	zero profit condition for good X6JP
PRF_X7JP	zero profit condition for good X7JP
PRF_X8JP	zero profit condition for good X8JP
PRF_X9JP	zero profit condition for good X9JP
PRF_WJP	definition of the expenditure function
MKT_X0JP	equilibrium for the market of good X0JP
MKT_X1JP	equilibrium for the market of good X1JP
MKT_X2JP	equilibrium for the market of good X2JP
MKT_X3JP	equilibrium for the market of good X3JP
MKT_X5JP	equilibrium for the market of good X5JP
MKT_X6JP	equilibrium for the market of good X6JP
MKT_X7JP	equilibrium for the market of good X7JP
MKT_X8JP	equilibrium for the market of good X8JP
MKT_X9JP	equilibrium for the market of good X9JP
MKT_LJP	equilibrium for labor market
MKT_KJP	equilibrium for capital market
MKT_WJP	this equation determines the welfare level
I_CONSJP	definition of income
I_TOT_IMP_0_JP	cumulative imports good zero
I_TOT_EXP_0_JP	cumulative exports good zero
I_NET_EXP_0_JP	net exports good zero
I_TOT_IMP_1_JP	cumulative imports good one
I_TOT_EXP_1_JP	cumulative exports good one
I_NET_EXP_1_JP	net exports good one
I_TOT_IMP_2_JP	cumulative imports good two
I_TOT_EXP_2_JP	cumulative exports good two
I_NET_EXP_2_JP	net exports good two
I_TOT_IMP_3_JP	cumulative imports good three
I_TOT_EXP_3_JP	cumulative exports good three
I_NET_EXP_3_JP	net exports good three
I_TOT_IMP_5_JP	cumulative imports good five
I_TOT_EXP_5_JP	cumulative exports good five
I_NET_EXP_5_JP	net exports good five
I_TOT_IMP_6_JP	cumulative imports good six
I_TOT_EXP_6_JP	cumulative exports good six
I_NET_EXP_6_JP	net exports good six
I_TOT_IMP_7_JP	cumulative imports good seven
I_TOT_EXP_7_JP	cumulative exports good seven
I_NET_EXP_7_JP	net exports good seven
I_TOT_IMP_8_JP	cumulative imports good eight
I_TOT_EXP_8_JP	cumulative exports good eight
I_NET_EXP_8_JP	net exports good eight
I_TOT_IMP_9_JP	cumulative imports good nine
I_TOT_EXP_9_JP	cumulative exports good nine
I_NET_EXP_9_JP	net exports good nine
I_TARIFF_INC_JP	tariff income JP
PRF_X0US	zero profit condition for good X0US
PRF_X1US	zero profit condition for good X1US
PRF_X2US	zero profit condition for good X2US
PRF_X3US	zero profit condition for good X3US
PRF_X5US	zero profit condition for good X5US
PRF_X6US	zero profit condition for good X6US
PRF_X7US	zero profit condition for good X7US
PRF_X8US	zero profit condition for good X8US
PRF_X9US	zero profit condition for good X9US
PRF_WUS	definition of the expenditure function
MKT_X0US	equilibrium for the market of good X0US
MKT_X1US	equilibrium for the market of good X1US

MKT_X2US	equilibrium for the market of good X2US
MKT_X3US	equilibrium for the market of good X3US
MKT_X5US	equilibrium for the market of good X5US
MKT_X6US	equilibrium for the market of good X6US
MKT_X7US	equilibrium for the market of good X7US
MKT_X8US	equilibrium for the market of good X8US
MKT_X9US	equilibrium for the market of good X9US
MKT_LUS	equilibrium for labor market
MKT_KUS	equilibrium for capital market
MKT_WUS	this equation determines the welfare level
I_CONSUS	definition of income
I_TOT_IMP_0_US	cumulative imports good zero
I_TOT_EXP_0_US	cumulative exports good zero
I_NET_EXP_0_US	net exports good zero
I_TOT_IMP_1_US	cumulative imports good one
I_TOT_EXP_1_US	cumulative exports good one
I_NET_EXP_1_US	net exports good one
I_TOT_IMP_2_US	cumulative imports good two
I_TOT_EXP_2_US	cumulative exports good two
I_NET_EXP_2_US	net exports good two
I_TOT_IMP_3_US	cumulative imports good three
I_TOT_EXP_3_US	cumulative exports good three
I_NET_EXP_3_US	net exports good three
I_TOT_IMP_5_US	cumulative imports good five
I_TOT_EXP_5_US	cumulative exports good five
I_NET_EXP_5_US	net exports good five
I_TOT_IMP_6_US	cumulative imports good six
I_TOT_EXP_6_US	cumulative exports good six
I_NET_EXP_6_US	net exports good six
I_TOT_IMP_7_US	cumulative imports good seven
I_TOT_EXP_7_US	cumulative exports good seven
I_NET_EXP_7_US	net exports good seven
I_TOT_IMP_8_US	cumulative imports good eight
I_TOT_EXP_8_US	cumulative exports good eight
I_NET_EXP_8_US	net exports good eight
I_TOT_IMP_9_US	cumulative imports good nine
I_TOT_EXP_9_US	cumulative exports good nine
I_NET_EXP_9_US	net exports good nine
I_TARIFF_INC_US	tariff income US
PX0NL_DE	zero profit condition for exports good 0 from NL to DE
PX0DE_NL	zero profit condition for exports good 0 from DE to NL
PX0NL_BE	zero profit condition for exports good 0 from NL to BE
PX0BE_NL	zero profit condition for exports good 0 from BE to NL
PX0BE_DE	zero profit condition for exports good 0 from BE to DE
PX0DE_BE	zero profit condition for exports good 0 from DE to BE
PX0NL_FR	zero profit condition for exports good 0 from NL to FR
PX0FR_NL	zero profit condition for exports good 0 from FR to NL
PX0FR_BE	zero profit condition for exports good 0 from FR to BE
PX0BE_FR	zero profit condition for exports good 0 from BE to FR
PX0FR_DE	zero profit condition for exports good 0 from FR to DE
PX0DE_FR	zero profit condition for exports good 0 from DE to FR

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PX0NL_UK   zero profit condition for exports good 0 from NL to UK

PX0UK_NL   zero profit condition for exports good 0 from UK to NL

PX0DE_UK   zero profit condition for exports good 0 from DE to UK

PX0UK_DE   zero profit condition for exports good 0 from UK to DE

PX0BE_UK   zero profit condition for exports good 0 from BE to UK

PX0UK_BE   zero profit condition for exports good 0 from UK to BE

PX0FR_UK   zero profit condition for exports good 0 from FR to UK

PX0UK_FR   zero profit condition for exports good 0 from UK to FR

PX0NL_IT   zero profit condition for exports good 0 from NL to IT
PX0IT_NL   zero profit condition for exports good 0 from IT to NL
PX0DE_IT   zero profit condition for exports good 0 from DE to IT
PX0IT_DE   zero profit condition for exports good 0 from IT to DE
PX0BE_IT   zero profit condition for exports good 0 from BE to IT
PX0IT_BE   zero profit condition for exports good 0 from IT to BE
PX0FR_IT   zero profit condition for exports good 0 from FR to IT
PX0IT_FR   zero profit condition for exports good 0 from IT to FR
PX0UK_IT   zero profit condition for exports good 0 from UK to IT
PX0IT_UK   zero profit condition for exports good 0 from IT to UK

PX0NL_CN   zero profit condition for exports good 0 from NL to CN

PX0CN_NL   zero profit condition for exports good 0 from CN to NL

PX0DE_CN   zero profit condition for exports good 0 from DE to CN

PX0CN_DE   zero profit condition for exports good 0 from CN to DE

PX0BE_CN   zero profit condition for exports good 0 from BE to CN

PX0CN_BE   zero profit condition for exports good 0 from CN to BE

PX0FR_CN   zero profit condition for exports good 0 from FR to CN

PX0CN_FR   zero profit condition for exports good 0 from CN to FR

PX0UK_CN   zero profit condition for exports good 0 from UK to CN

PX0CN_UK   zero profit condition for exports good 0 from CN to UK

PX0IT_CN   zero profit condition for exports good 0 from IT to CN
PX0CN_IT   zero profit condition for exports good 0 from CN to IT

PX0NL_JP   zero profit condition for exports good 0 from NL to JP
PX0JP_NL   zero profit condition for exports good 0 from JP to NL
PX0DE_JP   zero profit condition for exports good 0 from DE to JP
PX0JP_DE   zero profit condition for exports good 0 from JP to DE
PX0BE_JP   zero profit condition for exports good 0 from BE to JP
PX0JP_BE   zero profit condition for exports good 0 from JP to BE
PX0FR_JP   zero profit condition for exports good 0 from FR to JP
PX0JP_FR   zero profit condition for exports good 0 from JP to FR
PX0UK_JP   zero profit condition for exports good 0 from UK to JP
PX0JP_UK   zero profit condition for exports good 0 from JP to UK
PX0IT_JP   zero profit condition for exports good 0 from IT to JP
PX0JP_IT   zero profit condition for exports good 0 from JP to IT

PX0CN_JP   zero profit condition for exports good 0 from CN to JP
PX0JP_CN   zero profit condition for exports good 0 from JP to CN

PX0NL_US   zero profit condition for exports good 0 from NL to US

PX0US_NL   zero profit condition for exports good 0 from US to NL

PX0DE_US   zero profit condition for exports good 0 from DE to US

PX0US_DE   zero profit condition for exports good 0 from US to DE

PX0BE_US   zero profit condition for exports good 0 from BE to US

PX0US_BE   zero profit condition for exports good 0 from US to BE

PX0FR_US   zero profit condition for exports good 0 from FR to US

PX0US_FR   zero profit condition for exports good 0 from US to FR

PX0UK_US   zero profit condition for exports good 0 from UK to US

PX0US_UK   zero profit condition for exports good 0 from US to UK

PX0IT_US   zero profit condition for exports good 0 from IT to US
PX0US_IT   zero profit condition for exports good 0 from US to IT
PX0CN_US   zero profit condition for exports good 0 from CN to US

PX0US_CN   zero profit condition for exports good 0 from US to CN

PX0JP_US   zero profit condition for exports good 0 from JP to US
PX0US_JP   zero profit condition for exports good 0 from US to JP

PX1NL_DE   zero profit condition for exports good 1 from NL to DE

PX1DE_NL   zero profit condition for exports good 1 from DE to NL

PX1NL_BE   zero profit condition for exports good 1 from NL to BE

PX1BE_NL   zero profit condition for exports good 1 from BE to NL

PX1BE_DE   zero profit condition for exports good 1 from BE to DE

PX1DE_BE   zero profit condition for exports good 1 from DE to BE

PX1NL_FR   zero profit condition for exports good 1 from NL to FR
PX1FR_NL   zero profit condition for exports good 1 from FR to NL
PX1FR_BE   zero profit condition for exports good 1 from FR to BE
PX1BE_FR   zero profit condition for exports good 1 from BE to FR
PX1FR_DE   zero profit condition for exports good 1 from FR to DE

PX1DE_FR   zero profit condition for exports good 1 from DE to FR

PX1NL_UK   zero profit condition for exports good 1 from NL to UK

PX1UK_NL   zero profit condition for exports good 1 from UK to NL

PX1DE_UK   zero profit condition for exports good 1 from DE to UK

PX1UK_DE   zero profit condition for exports good 1 from UK to DE

PX1BE_UK   zero profit condition for exports good 1 from BE to UK
PX1UK_BE   zero profit condition for exports good 1 from UK to BE
PX1FR_UK   zero profit condition for exports good 1 from FR to UK
PX1UK_FR   zero profit condition for exports good 1 from UK to FR

PX1NL_IT   zero profit condition for exports good 1 from NL to IT
PX1IT_NL   zero profit condition for exports good 1 from IT to NL
PX1DE_IT   zero profit condition for exports good 1 from DE to IT
PX1IT_DE   zero profit condition for exports good 1 from IT to DE
PX1BE_IT   zero profit condition for exports good 1 from BE to IT
PX1IT_BE   zero profit condition for exports good 1 from IT to BE
PX1FR_IT   zero profit condition for exports good 1 from FR to IT
PX1IT_FR   zero profit condition for exports good 1 from IT to FR
PX1UK_IT   zero profit condition for exports good 1 from UK to IT
PX1IT_UK   zero profit condition for exports good 1 from IT to UK

PX1NL_CN   zero profit condition for exports good 1 from NL to CN
PX1CN_NL   zero profit condition for exports good 1 from CN to NL
PX1DE_CN   zero profit condition for exports good 1 from DE to CN
PX1CN_DE   zero profit condition for exports good 1 from CN to DE
PX1BE_CN   zero profit condition for exports good 1 from BE to CN
PX1CN_BE   zero profit condition for exports good 1 from CN to BE
PX1FR_CN   zero profit condition for exports good 1 from FR to CN
PX1CN_FR   zero profit condition for exports good 1 from CN to FR
PX1UK_CN   zero profit condition for exports good 1 from UK to CN
PX1CN_UK   zero profit condition for exports good 1 from CN to UK
PX1IT_CN   zero profit condition for exports good 1 from IT to CN
PX1CN_IT   zero profit condition for exports good 1 from CN to IT

PX1NL_JP   zero profit condition for exports good 1 from NL to JP
PX1JP_NL   zero profit condition for exports good 1 from JP to NL
PX1DE_JP   zero profit condition for exports good 1 from DE to JP
PX1JP_DE   zero profit condition for exports good 1 from JP to DE
PX1BE_JP   zero profit condition for exports good 1 from BE to JP
PX1JP_BE   zero profit condition for exports good 1 from JP to BE
PX1FR_JP   zero profit condition for exports good 1 from FR to JP
PX1JP_FR   zero profit condition for exports good 1 from JP to FR
PX1UK_JP   zero profit condition for exports good 1 from UK to JP
PX1JP_UK   zero profit condition for exports good 1 from JP to UK
PX1IT_JP   zero profit condition for exports good 1 from IT to JP
PX1JP_IT   zero profit condition for exports good 1 from JP to IT
PX1CN_JP   zero profit condition for exports good 1 from CN to JP
PX1JP_CN   zero profit condition for exports good 1 from JP to CN

PX1NL_US   zero profit condition for exports good 1 from NL to US
PX1US_NL   zero profit condition for exports good 1 from US to NL

PX1DE_US   zero profit condition for exports good 1 from DE to US
PX1US_DE   zero profit condition for exports good 1 from US to DE
PX1BE_US   zero profit condition for exports good 1 from BE to US
PX1US_BE   zero profit condition for exports good 1 from US to BE
PX1FR_US   zero profit condition for exports good 1 from FR to US
PX1US_FR   zero profit condition for exports good 1 from US to FR
PX1UK_US   zero profit condition for exports good 1 from UK to US
PX1US_UK   zero profit condition for exports good 1 from US to UK
PX1IT_US   zero profit condition for exports good 1 from IT to US
PX1US_IT   zero profit condition for exports good 1 from US to IT
PX1CN_US   zero profit condition for exports good 1 from CN to US
PX1US_CN   zero profit condition for exports good 1 from US to CN
PX1JP_US   zero profit condition for exports good 1 from JP to US
PX1US_JP   zero profit condition for exports good 1 from US to JP

PX2NL_DE   zero profit condition for exports good 2 from NL to DE
PX2DE_NL   zero profit condition for exports good 2 from DE to NL
PX2NL_BE   zero profit condition for exports good 2 from NL to BE
PX2BE_NL   zero profit condition for exports good 2 from BE to NL
PX2BE_DE   zero profit condition for exports good 2 from BE to DE
PX2DE_BE   zero profit condition for exports good 2 from DE to BE
PX2NL_FR   zero profit condition for exports good 2 from NL to FR
PX2FR_NL   zero profit condition for exports good 2 from FR to NL
PX2FR_BE   zero profit condition for exports good 2 from FR to BE
PX2BE_FR   zero profit condition for exports good 2 from BE to FR
PX2FR_DE   zero profit condition for exports good 2 from FR to DE
PX2DE_FR   zero profit condition for exports good 2 from DE to FR
PX2NL_UK   zero profit condition for exports good 2 from NL to UK
PX2UK_NL   zero profit condition for exports good 2 from UK to NL
PX2DE_UK   zero profit condition for exports good 2 from DE to UK
PX2UK_DE   zero profit condition for exports good 2 from UK to DE
PX2BE_UK   zero profit condition for exports good 2 from BE to UK
PX2UK_BE   zero profit condition for exports good 2 from UK to BE
PX2FR_UK   zero profit condition for exports good 2 from FR to UK

PX2UK_FR   zero profit condition for exports good 2 from UK to FR

PX2NL_IT   zero profit condition for exports good 2 from NL to IT
PX2IT_NL   zero profit condition for exports good 2 from IT to NL
PX2DE_IT   zero profit condition for exports good 2 from DE to IT
PX2IT_DE   zero profit condition for exports good 2 from IT to DE
PX2BE_IT   zero profit condition for exports good 2 from BE to IT
PX2IT_BE   zero profit condition for exports good 2 from IT to BE
PX2FR_IT   zero profit condition for exports good 2 from FR to IT
PX2IT_FR   zero profit condition for exports good 2 from IT to FR
PX2UK_IT   zero profit condition for exports good 2 from UK to IT
PX2IT_UK   zero profit condition for exports good 2 from IT to UK

PX2NL_CN   zero profit condition for exports good 2 from NL to CN
PX2CN_NL   zero profit condition for exports good 2 from CN to NL
PX2DE_CN   zero profit condition for exports good 2 from DE to CN
PX2CN_DE   zero profit condition for exports good 2 from CN to DE
PX2BE_CN   zero profit condition for exports good 2 from BE to CN
PX2CN_BE   zero profit condition for exports good 2 from CN to BE
PX2FR_CN   zero profit condition for exports good 2 from FR to CN
PX2CN_FR   zero profit condition for exports good 2 from CN to FR
PX2UK_CN   zero profit condition for exports good 2 from UK to CN
PX2CN_UK   zero profit condition for exports good 2 from CN to UK
PX2IT_CN   zero profit condition for exports good 2 from IT to CN
PX2CN_IT   zero profit condition for exports good 2 from CN to IT

PX2NL_JP   zero profit condition for exports good 2 from NL to JP
PX2JP_NL   zero profit condition for exports good 2 from JP to NL
PX2DE_JP   zero profit condition for exports good 2 from DE to JP
PX2JP_DE   zero profit condition for exports good 2 from JP to DE
PX2BE_JP   zero profit condition for exports good 2 from BE to JP
PX2JP_BE   zero profit condition for exports good 2 from JP to BE
PX2FR_JP   zero profit condition for exports good 2 from FR to JP
PX2JP_FR   zero profit condition for exports good 2 from JP to FR
PX2UK_JP   zero profit condition for exports good 2 from UK to JP
PX2JP_UK   zero profit condition for exports good 2 from JP to UK
PX2IT_JP   zero profit condition for exports good 2 from IT to JP
PX2JP_IT   zero profit condition for exports good 2 from JP to IT
PX2CN_JP   zero profit condition for exports good 2 from CN to JP
PX2JP_CN   zero profit condition for exports good 2 from JP to CN

PX2NL_US   zero profit condition for exports good 2 from NL to US
PX2US_NL   zero profit condition for exports good 2 from US to NL
PX2DE_US   zero profit condition for exports good 2 from DE to US
PX2US_DE   zero profit condition for exports good 2 from US to DE
PX2BE_US   zero profit condition for exports good 2 from BE to US

PX2US_BE   zero profit condition for exports good 2 from US to BE
PX2FR_US   zero profit condition for exports good 2 from FR to US
PX2US_FR   zero profit condition for exports good 2 from US to FR
PX2UK_US   zero profit condition for exports good 2 from UK to US
PX2US_UK   zero profit condition for exports good 2 from US to UK
PX2IT_US   zero profit condition for exports good 2 from IT to US
PX2US_IT   zero profit condition for exports good 2 from US to IT
PX2CN_US   zero profit condition for exports good 2 from CN to US
PX2US_CN   zero profit condition for exports good 2 from US to CN
PX2JP_US   zero profit condition for exports good 2 from JP to US
PX2US_JP   zero profit condition for exports good 2 from US to JP

PX3NL_DE   zero profit condition for exports good 3 from NL to DE
PX3DE_NL   zero profit condition for exports good 3 from DE to NL
PX3NL_BE   zero profit condition for exports good 3 from NL to BE
PX3BE_NL   zero profit condition for exports good 3 from BE to NL
PX3BE_DE   zero profit condition for exports good 3 from BE to DE
PX3DE_BE   zero profit condition for exports good 3 from DE to BE

PX3NL_FR   zero profit condition for exports good 3 from NL to FR
PX3FR_NL   zero profit condition for exports good 3 from FR to NL
PX3FR_BE   zero profit condition for exports good 3 from FR to BE
PX3BE_FR   zero profit condition for exports good 3 from BE to FR
PX3FR_DE   zero profit condition for exports good 3 from FR to DE
PX3DE_FR   zero profit condition for exports good 3 from DE to FR

PX3NL_UK   zero profit condition for exports good 3 from NL to UK
PX3UK_NL   zero profit condition for exports good 3 from UK to NL
PX3DE_UK   zero profit condition for exports good 3 from DE to UK
PX3UK_DE   zero profit condition for exports good 3 from UK to DE
PX3BE_UK   zero profit condition for exports good 3 from BE to UK
PX3UK_BE   zero profit condition for exports good 3 from UK to BE
PX3FR_UK   zero profit condition for exports good 3 from FR to UK
PX3UK_FR   zero profit condition for exports good 3 from UK to FR

PX3NL_IT   zero profit condition for exports good 3 from NL to IT
PX3IT_NL   zero profit condition for exports good 3 from IT to NL
PX3DE_IT   zero profit condition for exports good 3 from DE to IT
PX3IT_DE   zero profit condition for exports good 3 from IT to DE

PX3BE_IT	zero profit condition for exports good 3 from BE to IT
PX3IT_BE	zero profit condition for exports good 3 from IT to BE
PX3FR_IT	zero profit condition for exports good 3 from FR to IT
PX3IT_FR	zero profit condition for exports good 3 from IT to FR
PX3UK_IT	zero profit condition for exports good 3 from UK to IT
PX3IT_UK	zero profit condition for exports good 3 from IT to UK
PX3NL_CN	zero profit condition for exports good 3 from NL to CN
PX3CN_NL	zero profit condition for exports good 3 from CN to NL
PX3DE_CN	zero profit condition for exports good 3 from DE to CN
PX3CN_DE	zero profit condition for exports good 3 from CN to DE
PX3BE_CN	zero profit condition for exports good 3 from BE to CN
PX3CN_BE	zero profit condition for exports good 3 from CN to BE
PX3FR_CN	zero profit condition for exports good 3 from FR to CN
PX3CN_FR	zero profit condition for exports good 3 from CN to FR
PX3UK_CN	zero profit condition for exports good 3 from UK to CN
PX3CN_UK	zero profit condition for exports good 3 from CN to UK
PX3IT_CN	zero profit condition for exports good 3 from IT to CN
PX3CN_IT	zero profit condition for exports good 3 from CN to IT
PX3NL_JP	zero profit condition for exports good 3 from NL to JP
PX3JP_NL	zero profit condition for exports good 3 from JP to NL
PX3DE_JP	zero profit condition for exports good 3 from DE to JP
PX3JP_DE	zero profit condition for exports good 3 from JP to DE
PX3BE_JP	zero profit condition for exports good 3 from BE to JP
PX3JP_BE	zero profit condition for exports good 3 from JP to BE
PX3FR_JP	zero profit condition for exports good 3 from FR to JP
PX3JP_FR	zero profit condition for exports good 3 from JP to FR
PX3UK_JP	zero profit condition for exports good 3 from UK to JP
PX3JP_UK	zero profit condition for exports good 3 from JP to UK
PX3IT_JP	zero profit condition for exports good 3 from IT to JP
PX3JP_IT	zero profit condition for exports good 3 from JP to IT
PX3CN_JP	zero profit condition for exports good 3 from CN to JP
PX3JP_CN	zero profit condition for exports good 3 from JP to CN
PX3NL_US	zero profit condition for exports good 3 from NL to US
PX3US_NL	zero profit condition for exports good 3 from US to NL
PX3DE_US	zero profit condition for exports good 3 from DE to US
PX3US_DE	zero profit condition for exports good 3 from US to DE
PX3BE_US	zero profit condition for exports good 3 from BE to US
PX3US_BE	zero profit condition for exports good 3 from US to BE
PX3FR_US	zero profit condition for exports good 3 from FR to US
PX3US_FR	zero profit condition for exports good 3 from US to FR
PX3UK_US	zero profit condition for exports good 3 from UK to US

PX3US_UK	zero profit condition for exports good 3 from US to UK
PX3IT_US	zero profit condition for exports good 3 from IT to US
PX3US_IT	zero profit condition for exports good 3 from US to IT
PX3CN_US	zero profit condition for exports good 3 from CN to US
PX3US_CN	zero profit condition for exports good 3 from US to CN
PX3JP_US	zero profit condition for exports good 3 from JP to US
PX3US_JP	zero profit condition for exports good 3 from US to JP
PX5NL_DE	zero profit condition for exports good 5 from NL to DE
PX5DE_NL	zero profit condition for exports good 5 from DE to NL
PX5NL_BE	zero profit condition for exports good 5 from NL to BE
PX5BE_NL	zero profit condition for exports good 5 from BE to NL
PX5BE_DE	zero profit condition for exports good 5 from BE to DE
PX5DE_BE	zero profit condition for exports good 5 from DE to BE
PX5NL_FR	zero profit condition for exports good 5 from NL to FR
PX5FR_NL	zero profit condition for exports good 5 from FR to NL
PX5FR_BE	zero profit condition for exports good 5 from FR to BE
PX5BE_FR	zero profit condition for exports good 5 from BE to FR
PX5FR_DE	zero profit condition for exports good 5 from FR to DE
PX5DE_FR	zero profit condition for exports good 5 from DE to FR
PX5NL_UK	zero profit condition for exports good 5 from NL to UK
PX5UK_NL	zero profit condition for exports good 5 from UK to NL
PX5DE_UK	zero profit condition for exports good 5 from DE to UK
PX5UK_DE	zero profit condition for exports good 5 from UK to DE
PX5BE_UK	zero profit condition for exports good 5 from BE to UK
PX5UK_BE	zero profit condition for exports good 5 from UK to BE
PX5FR_UK	zero profit condition for exports good 5 from FR to UK
PX5UK_FR	zero profit condition for exports good 5 from UK to FR
PX5NL_IT	zero profit condition for exports good 5 from NL to IT
PX5IT_NL	zero profit condition for exports good 5 from IT to NL
PX5DE_IT	zero profit condition for exports good 5 from DE to IT
PX5IT_DE	zero profit condition for exports good 5 from IT to DE
PX5BE_IT	zero profit condition for exports good 5 from BE to IT
PX5IT_BE	zero profit condition for exports good 5 from IT to BE
PX5FR_IT	zero profit condition for exports good 5 from FR to IT
PX5IT_FR	zero profit condition for exports good 5 from IT to FR
PX5UK_IT	zero profit condition for exports good 5 from UK to IT
PX5IT_UK	zero profit condition for exports good 5 from IT to UK

PX5NL_CN	zero profit condition for exports good 5 from NL to CN
PX5CN_NL	zero profit condition for exports good 5 from CN to NL
PX5DE_CN	zero profit condition for exports good 5 from DE to CN
PX5CN_DE	zero profit condition for exports good 5 from CN to DE
PX5BE_CN	zero profit condition for exports good 5 from BE to CN
PX5CN_BE	zero profit condition for exports good 5 from CN to BE
PX5FR_CN	zero profit condition for exports good 5 from FR to CN
PX5CN_FR	zero profit condition for exports good 5 from CN to FR
PX5UK_CN	zero profit condition for exports good 5 from UK to CN
PX5CN_UK	zero profit condition for exports good 5 from CN to UK
PX5IT_CN	zero profit condition for exports good 5 from IT to CN
PX5CN_IT	zero profit condition for exports good 5 from CN to IT
PX5NL_JP	zero profit condition for exports good 5 from NL to JP
PX5JP_NL	zero profit condition for exports good 5 from JP to NL
PX5DE_JP	zero profit condition for exports good 5 from DE to JP
PX5JP_DE	zero profit condition for exports good 5 from JP to DE
PX5BE_JP	zero profit condition for exports good 5 from BE to JP
PX5JP_BE	zero profit condition for exports good 5 from JP to BE
PX5FR_JP	zero profit condition for exports good 5 from FR to JP
PX5JP_FR	zero profit condition for exports good 5 from JP to FR
PX5UK_JP	zero profit condition for exports good 5 from UK to JP
PX5JP_UK	zero profit condition for exports good 5 from JP to UK
PX5IT_JP	zero profit condition for exports good 5 from IT to JP
PX5JP_IT	zero profit condition for exports good 5 from JP to IT
PX5CN_JP	zero profit condition for exports good 5 from CN to JP
PX5JP_CN	zero profit condition for exports good 5 from JP to CN
PX5NL_US	zero profit condition for exports good 5 from NL to US
PX5US_NL	zero profit condition for exports good 5 from US to NL
PX5DE_US	zero profit condition for exports good 5 from DE to US
PX5US_DE	zero profit condition for exports good 5 from US to DE
PX5BE_US	zero profit condition for exports good 5 from BE to US
PX5US_BE	zero profit condition for exports good 5 from US to BE
PX5FR_US	zero profit condition for exports good 5 from FR to US
PX5US_FR	zero profit condition for exports good 5 from US to FR
PX5UK_US	zero profit condition for exports good 5 from UK to US
PX5US_UK	zero profit condition for exports good 5 from US to UK
PX5IT_US	zero profit condition for exports good 5 from IT to US
PX5US_IT	zero profit condition for exports good 5 from US to IT
PX5CN_US	zero profit condition for exports good 5 from CN to US
PX5US_CN	zero profit condition for exports good 5 from US to CN
PX5JP_US	zero profit condition for exports good 5 from JP to US
PX5US_JP	zero profit condition for exports good 5 from US to JP
PX6NL_DE	zero profit condition for exports good 6 from NL to DE
PX6DE_NL	zero profit condition for exports good 6 from DE to NL
PX6NL_BE	zero profit condition for exports good 6 from NL to BE
PX6BE_NL	zero profit condition for exports good 6 from BE to NL
PX6BE_DE	zero profit condition for exports good 6 from BE to DE
PX6DE_BE	zero profit condition for exports good 6 from DE to BE
PX6NL_FR	zero profit condition for exports good 6 from NL to FR
PX6FR_NL	zero profit condition for exports good 6 from FR to NL
PX6FR_BE	zero profit condition for exports good 6 from FR to BE
PX6BE_FR	zero profit condition for exports good 6 from BE to FR
PX6FR_DE	zero profit condition for exports good 6 from FR to DE
PX6DE_FR	zero profit condition for exports good 6 from DE to FR
PX6NL_UK	zero profit condition for exports good 6 from NL to UK
PX6UK_NL	zero profit condition for exports good 6 from UK to NL
PX6DE_UK	zero profit condition for exports good 6 from DE to UK
PX6UK_DE	zero profit condition for exports good 6 from UK to DE
PX6BE_UK	zero profit condition for exports good 6 from BE to UK
PX6UK_BE	zero profit condition for exports good 6 from UK to BE
PX6FR_UK	zero profit condition for exports good 6 from FR to UK
PX6UK_FR	zero profit condition for exports good 6 from UK to FR
PX6NL_IT	zero profit condition for exports good 6 from NL to IT
PX6IT_NL	zero profit condition for exports good 6 from IT to NL
PX6DE_IT	zero profit condition for exports good 6 from DE to IT
PX6IT_DE	zero profit condition for exports good 6 from IT to DE
PX6BE_IT	zero profit condition for exports good 6 from BE to IT
PX6IT_BE	zero profit condition for exports good 6 from IT to BE
PX6FR_IT	zero profit condition for exports good 6 from FR to IT
PX6IT_FR	zero profit condition for exports good 6 from IT to FR
PX6UK_IT	zero profit condition for exports good 6 from UK to IT
PX6IT_UK	zero profit condition for exports good 6 from IT to UK
PX6NL_CN	zero profit condition for exports good 6 from NL to CN
PX6CN_NL	zero profit condition for exports good 6 from CN to NL
PX6DE_CN	zero profit condition for exports good 6 from DE to CN

PX6CN_DE	zero profit condition for exports good 6 from CN to DE	PX7DE_NL	zero profit condition for exports good 7 from DE to NL
PX6BE_CN	zero profit condition for exports good 6 from BE to CN	PX7NL_BE	zero profit condition for exports good 7 from NL to BE
PX6CN_BE	zero profit condition for exports good 6 from CN to BE	PX7BE_NL	zero profit condition for exports good 7 from BE to NL
PX6FR_CN	zero profit condition for exports good 6 from FR to CN	PX7BE_DE	zero profit condition for exports good 7 from BE to DE
PX6CN_FR	zero profit condition for exports good 6 from CN to FR	PX7DE_BE	zero profit condition for exports good 7 from DE to BE
PX6UK_CN	zero profit condition for exports good 6 from UK to CN		
PX6CN_UK	zero profit condition for exports good 6 from CN to UK	PX7NL_FR	zero profit condition for exports good 7 from NL to FR
		PX7FR_NL	zero profit condition for exports good 7 from FR to NL
PX6IT_CN	zero profit condition for exports good 6 from IT to CN	PX7FR_BE	zero profit condition for exports good 7 from FR to BE
PX6CN_IT	zero profit condition for exports good 6 from CN to IT	PX7BE_FR	zero profit condition for exports good 7 from BE to FR
		PX7FR_DE	zero profit condition for exports good 7 from FR to DE
PX6NL_JP	zero profit condition for exports good 6 from NL to JP	PX7DE_FR	zero profit condition for exports good 7 from DE to FR
PX6JP_NL	zero profit condition for exports good 6 from JP to NL		
PX6DE_JP	zero profit condition for exports good 6 from DE to JP		
PX6JP_DE	zero profit condition for exports good 6 from JP to DE	PX7NL_UK	zero profit condition for exports good 7 from NL to UK
PX6BE_JP	zero profit condition for exports good 6 from BE to JP	PX7UK_NL	zero profit condition for exports good 7 from UK to NL
PX6JP_BE	zero profit condition for exports good 6 from JP to BE	PX7DE_UK	zero profit condition for exports good 7 from DE to UK
PX6FR_JP	zero profit condition for exports good 6 from FR to JP	PX7UK_DE	zero profit condition for exports good 7 from UK to DE
PX6JP_FR	zero profit condition for exports good 6 from JP to FR	PX7BE_UK	zero profit condition for exports good 7 from BE to UK
PX6UK_JP	zero profit condition for exports good 6 from UK to JP	PX7UK_BE	zero profit condition for exports good 7 from UK to BE
PX6JP_UK	zero profit condition for exports good 6 from JP to UK	PX7FR_UK	zero profit condition for exports good 7 from FR to UK
PX6IT_JP	zero profit condition for exports good 6 from IT to JP	PX7UK_FR	zero profit condition for exports good 7 from UK to FR
PX6JP_IT	zero profit condition for exports good 6 from JP to IT		
PX6CN_JP	zero profit condition for exports good 6 from CN to JP	PX7NL_IT	zero profit condition for exports good 7 from NL to IT
PX6JP_CN	zero profit condition for exports good 6 from JP to CN	PX7IT_NL	zero profit condition for exports good 7 from IT to NL
		PX7DE_IT	zero profit condition for exports good 7 from DE to IT
PX6NL_US	zero profit condition for exports good 6 from NL to US	PX7IT_DE	zero profit condition for exports good 7 from IT to DE
PX6US_NL	zero profit condition for exports good 6 from US to NL	PX7BE_IT	zero profit condition for exports good 7 from BE to IT
PX6DE_US	zero profit condition for exports good 6 from DE to US	PX7IT_BE	zero profit condition for exports good 7 from IT to BE
PX6US_DE	zero profit condition for exports good 6 from US to DE	PX7FR_IT	zero profit condition for exports good 7 from FR to IT
PX6BE_US	zero profit condition for exports good 6 from BE to US	PX7IT_FR	zero profit condition for exports good 7 from IT to FR
PX6US_BE	zero profit condition for exports good 6 from US to BE	PX7UK_IT	zero profit condition for exports good 7 from UK to IT
PX6FR_US	zero profit condition for exports good 6 from FR to US	PX7IT_UK	zero profit condition for exports good 7 from IT to UK
PX6US_FR	zero profit condition for exports good 6 from US to FR		
PX6UK_US	zero profit condition for exports good 6 from UK to US	PX7NL_CN	zero profit condition for exports good 7 from NL to CN
PX6US_UK	zero profit condition for exports good 6 from US to UK	PX7CN_NL	zero profit condition for exports good 7 from CN to NL
PX6IT_US	zero profit condition for exports good 6 from IT to US	PX7DE_CN	zero profit condition for exports good 7 from DE to CN
PX6US_IT	zero profit condition for exports good 6 from US to IT	PX7CN_DE	zero profit condition for exports good 7 from CN to DE
PX6CN_US	zero profit condition for exports good 6 from CN to US	PX7BE_CN	zero profit condition for exports good 7 from BE to CN
PX6US_CN	zero profit condition for exports good 6 from US to CN	PX7CN_BE	zero profit condition for exports good 7 from CN to BE
PX6JP_US	zero profit condition for exports good 6 from JP to US	PX7FR_CN	zero profit condition for exports good 7 from FR to CN
PX6US_JP	zero profit condition for exports good 6 from US to JP		
PX7NL_DE	zero profit condition for exports good 7 from NL to DE		

PX7CN_FR	zero profit condition for exports good 7 from CN to FR	PX8BE_DE	zero profit condition for exports good 8 from BE to DE
PX7UK_CN	zero profit condition for exports good 7 from UK to CN	PX8DE_BE	zero profit condition for exports good 8 from DE to BE
PX7CN_UK	zero profit condition for exports good 7 from CN to UK		
PX7IT_CN	zero profit condition for exports good 7 from IT to CN	PX8NL_FR	zero profit condition for exports good 8 from NL to FR
PX7CN_IT	zero profit condition for exports good 7 from CN to IT	PX8FR_NL	zero profit condition for exports good 8 from FR to NL
		PX8FR_BE	zero profit condition for exports good 8 from FR to BE
		PX8BE_FR	zero profit condition for exports good 8 from BE to FR
PX7NL_JP	zero profit condition for exports good 7 from NL to JP	PX8FR_DE	zero profit condition for exports good 8 from FR to DE
PX7JP_NL	zero profit condition for exports good 7 from JP to NL		
PX7DE_JP	zero profit condition for exports good 7 from DE to JP	PX8DE_FR	zero profit condition for exports good 8 from DE to FR
PX7JP_DE	zero profit condition for exports good 7 from JP to DE		
PX7BE_JP	zero profit condition for exports good 7 from BE to JP		
PX7JP_BE	zero profit condition for exports good 7 from JP to BE	PX8NL_UK	zero profit condition for exports good 8 from NL to UK
PX7FR_JP	zero profit condition for exports good 7 from FR to JP	PX8UK_NL	zero profit condition for exports good 8 from UK to NL
PX7JP_FR	zero profit condition for exports good 7 from JP to FR	PX8DE_UK	zero profit condition for exports good 8 from DE to UK
PX7UK_JP	zero profit condition for exports good 7 from UK to JP		
PX7JP_UK	zero profit condition for exports good 7 from JP to UK	PX8UK_DE	zero profit condition for exports good 8 from UK to DE
PX7IT_JP	zero profit condition for exports good 7 from IT to JP		
PX7JP_IT	zero profit condition for exports good 7 from JP to IT	PX8BE_UK	zero profit condition for exports good 8 from BE to UK
PX7CN_JP	zero profit condition for exports good 7 from CN to JP		
PX7JP_CN	zero profit condition for exports good 7 from JP to CN	PX8UK_BE	zero profit condition for exports good 8 from UK to BE
PX7NL_US	zero profit condition for exports good 7 from NL to US	PX8FR_UK	zero profit condition for exports good 8 from FR to UK
PX7US_NL	zero profit condition for exports good 7 from US to NL	PX8UK_FR	zero profit condition for exports good 8 from UK to FR
PX7DE_US	zero profit condition for exports good 7 from DE to US		
PX7US_DE	zero profit condition for exports good 7 from US to DE	PX8NL_IT	zero profit condition for exports good 8 from NL to IT
PX7BE_US	zero profit condition for exports good 7 from BE to US	PX8IT_NL	zero profit condition for exports good 8 from IT to NL
		PX8DE_IT	zero profit condition for exports good 8 from DE to IT
PX7US_BE	zero profit condition for exports good 7 from US to BE	PX8IT_DE	zero profit condition for exports good 8 from IT to DE
		PX8BE_IT	zero profit condition for exports good 8 from BE to IT
PX7FR_US	zero profit condition for exports good 7 from FR to US	PX8IT_BE	zero profit condition for exports good 8 from IT to BE
		PX8FR_IT	zero profit condition for exports good 8 from FR to IT
PX7US_FR	zero profit condition for exports good 7 from US to FR	PX8IT_FR	zero profit condition for exports good 8 from IT to FR
		PX8UK_IT	zero profit condition for exports good 8 from UK to IT
PX7UK_US	zero profit condition for exports good 7 from UK to US	PX8IT_UK	zero profit condition for exports good 8 from IT to UK
PX7US_UK	zero profit condition for exports good 7 from US to UK	PX8NL_CN	zero profit condition for exports good 8 from NL to CN
PX7IT_US	zero profit condition for exports good 7 from IT to US	PX8CN_NL	zero profit condition for exports good 8 from CN to NL
PX7US_IT	zero profit condition for exports good 7 from US to IT		
PX7CN_US	zero profit condition for exports good 7 from CN to US	PX8DE_CN	zero profit condition for exports good 8 from DE to CN
PX7US_CN	zero profit condition for exports good 7 from US to CN	PX8CN_DE	zero profit condition for exports good 8 from CN to DE
		PX8BE_CN	zero profit condition for exports good 8 from BE to CN
PX7JP_US	zero profit condition for exports good 7 from JP to US	PX8CN_BE	zero profit condition for exports good 8 from CN to BE
PX7US_JP	zero profit condition for exports good 7 from US to JP		
		PX8FR_CN	zero profit condition for exports good 8 from FR to CN
PX8NL_DE	zero profit condition for exports good 8 from NL to DE	PX8CN_FR	zero profit condition for exports good 8 from CN to FR
PX8DE_NL	zero profit condition for exports good 8 from DE to NL	PX8UK_CN	zero profit condition for exports good 8 from UK to CN
PX8NL_BE	zero profit condition for exports good 8 from NL to BE	PX8CN_UK	zero profit condition for exports good 8 from CN to UK
PX8BE_NL	zero profit condition for exports good 8 from BE to NL	PX8IT_CN	zero profit condition for exports good 8 from IT to CN

PX8CN_IT   zero profit condition for exports good 8 from CN to IT

PX8NL_JP   zero profit condition for exports good 8 from NL to JP
PX8JP_NL   zero profit condition for exports good 8 from JP to NL
PX8DE_JP   zero profit condition for exports good 8 from DE to JP
PX8JP_DE   zero profit condition for exports good 8 from JP to DE
PX8BE_JP   zero profit condition for exports good 8 from BE to JP
PX8JP_BE   zero profit condition for exports good 8 from JP to BE
PX8FR_JP   zero profit condition for exports good 8 from FR to JP
PX8JP_FR   zero profit condition for exports good 8 from JP to FR
PX8UK_JP   zero profit condition for exports good 8 from UK to JP
PX8JP_UK   zero profit condition for exports good 8 from JP to UK
PX8IT_JP   zero profit condition for exports good 8 from IT to JP
PX8JP_IT   zero profit condition for exports good 8 from JP to IT
PX8CN_JP   zero profit condition for exports good 8 from CN to JP
PX8JP_CN   zero profit condition for exports good 8 from JP to CN

PX8NL_US   zero profit condition for exports good 8 from NL to US
PX8US_NL   zero profit condition for exports good 8 from US to NL
PX8DE_US   zero profit condition for exports good 8 from DE to US
PX8US_DE   zero profit condition for exports good 8 from US to DE
PX8BE_US   zero profit condition for exports good 8 from BE to US
PX8US_BE   zero profit condition for exports good 8 from US to BE
PX8FR_US   zero profit condition for exports good 8 from FR to US
PX8US_FR   zero profit condition for exports good 8 from US to FR
PX8UK_US   zero profit condition for exports good 8 from UK to US
PX8US_UK   zero profit condition for exports good 8 from US to UK
PX8IT_US   zero profit condition for exports good 8 from IT to US
PX8US_IT   zero profit condition for exports good 8 from US to IT
PX8CN_US   zero profit condition for exports good 8 from CN to US
PX8US_CN   zero profit condition for exports good 8 from US to CN
PX8JP_US   zero profit condition for exports good 8 from JP to US
PX8US_JP   zero profit condition for exports good 8 from US to JP

PX9NL_DE   zero profit condition for exports good 9 from NL to DE
PX9DE_NL   zero profit condition for exports good 9 from DE to NL

PX9NL_BE   zero profit condition for exports good 9 from NL to BE
PX9BE_NL   zero profit condition for exports good 9 from BE to NL
PX9BE_DE   zero profit condition for exports good 9 from BE to DE
PX9DE_BE   zero profit condition for exports good 9 from DE to BE

PX9NL_FR   zero profit condition for exports good 9 from NL to FR
PX9FR_NL   zero profit condition for exports good 9 from FR to NL
PX9FR_BE   zero profit condition for exports good 9 from FR to BE

PX9BE_FR   zero profit condition for exports good 9 from BE to FR
PX9FR_DE   zero profit condition for exports good 9 from FR to DE
PX9DE_FR   zero profit condition for exports good 9 from DE to FR

PX9NL_UK   zero profit condition for exports good 9 from NL to UK
PX9UK_NL   zero profit condition for exports good 9 from UK to NL
PX9DE_UK   zero profit condition for exports good 9 from DE to UK
PX9UK_DE   zero profit condition for exports good 9 from UK to DE
PX9BE_UK   zero profit condition for exports good 9 from BE to UK
PX9UK_BE   zero profit condition for exports good 9 from UK to BE
PX9FR_UK   zero profit condition for exports good 9 from FR to UK
PX9UK_FR   zero profit condition for exports good 9 from UK to FR

PX9NL_IT   zero profit condition for exports good 9 from NL to IT
PX9IT_NL   zero profit condition for exports good 9 from IT to NL
PX9DE_IT   zero profit condition for exports good 9 from DE to IT
PX9IT_DE   zero profit condition for exports good 9 from IT to DE
PX9BE_IT   zero profit condition for exports good 9 from BE to IT
PX9IT_BE   zero profit condition for exports good 9 from IT to BE
PX9FR_IT   zero profit condition for exports good 9 from FR to IT
PX9IT_FR   zero profit condition for exports good 9 from IT to FR
PX9UK_IT   zero profit condition for exports good 9 from UK to IT
PX9IT_UK   zero profit condition for exports good 9 from IT to UK

PX9NL_CN   zero profit condition for exports good 9 from NL to CN
PX9CN_NL   zero profit condition for exports good 9 from CN to NL
PX9DE_CN   zero profit condition for exports good 9 from DE to CN
PX9CN_DE   zero profit condition for exports good 9 from CN to DE
PX9BE_CN   zero profit condition for exports good 9 from BE to CN
PX9CN_BE   zero profit condition for exports good 9 from CN to BE
PX9FR_CN   zero profit condition for exports good 9 from FR to CN
PX9CN_FR   zero profit condition for exports good 9 from CN to FR
PX9UK_CN   zero profit condition for exports good 9 from UK to CN
PX9CN_UK   zero profit condition for exports good 9 from CN to UK
PX9IT_CN   zero profit condition for exports good 9 from IT to CN
PX9CN_IT   zero profit condition for exports good 9 from CN to IT

PX9NL_JP   zero profit condition for exports good 9 from NL to JP
PX9JP_NL   zero profit condition for exports good 9 from JP to NL
PX9DE_JP   zero profit condition for exports good 9 from DE to JP
PX9JP_DE   zero profit condition for exports good 9 from JP to DE
PX9BE_JP   zero profit condition for exports good 9 from BE to JP
PX9JP_BE   zero profit condition for exports good 9 from JP to BE

PX9FR_JP	zero profit condition for exports good 9 from FR to JP	PX9US_BE	zero profit condition for exports good 9 from US to BE
PX9JP_FR	zero profit condition for exports good 9 from JP to FR		
PX9UK_JP	zero profit condition for exports good 9 from UK to JP	PX9FR_US	zero profit condition for exports good 9 from FR to US
PX9JP_UK	zero profit condition for exports good 9 from JP to UK		
PX9IT_JP	zero profit condition for exports good 9 from IT to JP	PX9US_FR	zero profit condition for exports good 9 from US to FR
PX9JP_IT	zero profit condition for exports good 9 from JP to IT		
PX9CN_JP	zero profit condition for exports good 9 from CN to JP	PX9UK_US	zero profit condition for exports good 9 from UK to US
PX9JP_CN	zero profit condition for exports good 9 from JP to CN		
		PX9US_UK	zero profit condition for exports good 9 from US to UK
PX9NL_US	zero profit condition for exports good 9 from NL to US	PX9IT_US	zero profit condition for exports good 9 from IT to US
PX9US_NL	zero profit condition for exports good 9 from US to NL	PX9US_IT	zero profit condition for exports good 9 from US to IT
		PX9CN_US	zero profit condition for exports good 9 from CN to US
PX9DE_US	zero profit condition for exports good 9 from DE to US		
		PX9US_CN	zero profit condition for exports good 9 from US to CN
PX9US_DE	zero profit condition for exports good 9 from US to DE		
		PX9JP_US	zero profit condition for exports good 9 from JP to US
PX9BE_US	zero profit condition for exports good 9 from BE to US	PX9US_JP	zero profit condition for exports good 9 from US to JP;

* MODEL EQUATIONS

* THE NETHERLANDS

* ZERO PROFIT CONDITIONS

PRF_X0NL.. PLNL**(alphaL0_NL) * PKNL**(alphaK0_NL) * PX9NL**(alpha90_NL) * PX1NL**(alpha10_NL)
* PX5NL**(1-alphaL0_NL-alphaK0_NL-alpha90_NL-alpha10_NL) =G= PX0NL;
PRF_X1NL.. PLNL**(alphaL1_NL) * PKNL**(alphaK1_NL) * PX9NL**(alpha91_NL) * PX0NL**(alpha01_NL)
* PX6NL**(1-alphaL1_NL-alphaK1_NL-alpha91_NL-alpha01_NL) =G= PX1NL;
PRF_X2NL.. PLNL**(alphaL2_NL) * PKNL**(alphaK2_NL) * PX9NL**(alpha92_NL) * PX6NL**(alpha62_NL)
* PX8NL**(1-alphaL2_NL-alphaK2_NL-alpha92_NL-alpha62_NL) =G= PX2NL;
PRF_X3NL.. PLNL**(alphaL3_NL) * PKNL**(alphaK3_NL) * PX2NL**(alpha23_NL) * PX9NL**(alpha93_NL)
* PX5NL**(1-alphaL3_NL-alphaK3_NL-alpha23_NL-alpha93_NL) =G= PX3NL;
PRF_X5NL.. PLNL**(alphaL5_NL) * PKNL**(alphaK5_NL) * PX9NL**(alpha95_NL) * PX3NL**(alpha35_NL)
* PX6NL**(1-alphaL5_NL-alphaK5_NL-alpha95_NL-alpha35_NL) =G= PX5NL;
PRF_X6NL.. PLNL**(alphaL6_NL) * PKNL**(alphaK6_NL) * PX9NL**(alpha96_NL) * PX5NL**(alpha56_NL)
* PX7NL**(1-alphaL6_NL-alphaK6_NL-alpha96_NL-alpha56_NL) =G= PX6NL;
PRF_X7NL.. PLNL**(alphaL7_NL) * PKNL**(alphaK7_NL) * PX9NL**(alpha97_NL) * PX6NL**(alpha67_NL)
* PX8NL**(1-alphaL7_NL-alphaK7_NL-alpha97_NL-alpha67_NL) =G= PX7NL;
PRF_X8NL.. PLNL**(alphaL8_NL) * PKNL**(alphaK8_NL) * PX9NL**(alpha98_NL) * PX6NL**(alpha68_NL)
* PX7NL**(1-alphaL8_NL-alphaK8_NL-alpha98_NL-alpha68_NL) =G= PX8NL;
PRF_X9NL.. PLNL**(alphaL9_NL) * PKNL**(alphaK9_NL) * PX6NL**(alpha69_NL) * PX8NL**(alpha89_NL)
* PX3NL**(1-alphaL9_NL-alphaK9_NL-alpha69_NL-alpha89_NL) =G= PX9NL;
PRF_WNL.. PX0NL**(phi0NL) * PX1NL**(phi1NL) * PX2NL**(phi2NL) * PX3NL**(phi3NL) * PX5NL**(phi5NL)* PX6NL**(phi6NL)
* PX7NL**(phi7NL) * PX8NL**(phi8NL) * PX9NL**(1-phi0NL-phi1NL-phi2NL-phi3NL-phi5NL-phi6NL-phi7NL-phi8NL) =G= PWNL;

* GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0NL.. X0NL + X0DE_NL + X0BE_NL + X0FR_NL + X0UK_NL + X0IT_NL + X0CN_NL + X0JP_NL + X0US_NL =G= WNL * phi0NL * PWNL / PX0NL
+ alpha01_NL * X1NL * PX1NL / PX0NL
+ X0NL_DE
+ X0NL_BE
+ X0NL_FR
+ X0NL_UK
+ X0NL_IT
+ X0NL_CN
+ X0NL_JP
+ X0NL_US;
MKT_X1NL.. X1NL + X1DE_NL + X1BE_NL + X1FR_NL + X1UK_NL + X1IT_NL + X1CN_NL + X1JP_NL + X1US_NL =G= WNL * phi1NL * PWNL / PX1NL
+ alpha10_NL * X0NL * PX0NL / PX1NL
+ X1NL_DE
+ X1NL_BE

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                    + X1NL_FR
                    + X1NL_UK
                    + X1NL_IT
                    + X1NL_CN
                    + X1NL_JP
                    + X1NL_US;
MKT_X2NL..   X2NL + X2DE_NL + X2BE_NL + X2FR_NL + X2UK_NL + X2IT_NL + X2CN_NL + X2JP_NL + X2US_NL =G= WNL * phi2NL * PWNL / PX2NL
                    + alpha23_NL * X3NL * PX3NL / PX2NL
                    + X2NL_DE
                    + X2NL_BE
                    + X2NL_FR
                    + X2NL_UK
                    + X2NL_IT
                    + X2NL_CN
                    + X2NL_JP
                    + X2NL_US;
MKT_X3NL..   X3NL + X3DE_NL + X3BE_NL + X3FR_NL + X3UK_NL + X3IT_NL + X3CN_NL + X3JP_NL + X3US_NL =G= WNL * phi3NL * PWNL / PX3NL
                    + alpha35_NL * X5NL * PX5NL / PX3NL
                    + (1-alphaL9_NL-alphaK9_NL-alpha69_NL-alpha89_NL) * X9NL * PX9NL / PX3NL
                    + X3NL_DE
                    + X3NL_BE
                    + X3NL_FR
                    + X3NL_UK
                    + X3NL_IT
                    + X3NL_CN
                    + X3NL_JP
                    + X3NL_US;
MKT_X5NL..   X5NL + X5DE_NL + X5BE_NL + X5FR_NL + X5UK_NL + X5IT_NL + X5CN_NL + X5JP_NL + X5US_NL =G= WNL * phi5NL * PWNL / PX5NL
                    + (1-alphaL0_NL-alphaK0_NL-alpha90_NL-alpha10_NL) * X0NL * PX0NL / PX5NL
                    + (1-alphaL3_NL-alphaK3_NL-alpha23_NL-alpha93_NL) * X3NL * PX3NL / PX5NL
                    + alpha56_NL * X6NL * PX6NL / PX5NL
                    + X5NL_DE
                    + X5NL_BE
                    + X5NL_FR
                    + X5NL_UK
                    + X5NL_IT
                    + X5NL_CN
                    + X5NL_JP
                    + X5NL_US;
MKT_X6NL..   X6NL + X6DE_NL + X6BE_NL + X6FR_NL + X6UK_NL + X6IT_NL + X6CN_NL + X6JP_NL + X6US_NL =G= WNL * phi6NL * PWNL / PX6NL
                    + (1-alphaL1_NL-alphaK1_NL-alpha91_NL-alpha01_NL) * X1NL * PX1NL / PX6NL
                    + alpha62_NL * X2NL * PX2NL / PX6NL
                    + (1-alphaL5_NL-alphaK5_NL-alpha95_NL-alpha35_NL) * X5NL * PX5NL / PX6NL
                    + alpha67_NL * X7NL * PX7NL / PX6NL + alpha68_NL * X8NL * PX8NL / PX6NL
                    + alpha69_NL * X9NL * PX9NL / PX6NL
                    + X6NL_DE
                    + X6NL_BE
                    + X6NL_FR
                    + X6NL_UK
                    + X6NL_IT
                    + X6NL_CN
                    + X6NL_JP
                    + X6NL_US;
MKT_X7NL..   X7NL + X7DE_NL + X7BE_NL + X7FR_NL + X7UK_NL + X7IT_NL + X7CN_NL + X7JP_NL + X7US_NL =G= WNL * phi7NL * PWNL / PX7NL
                    + (1-alphaL6_NL-alphaK6_NL-alpha96_NL-alpha56_NL) * X6NL * PX6NL / PX7NL
                    + (1-alphaL8_NL-alphaK8_NL-alpha98_NL-alpha68_NL) * X8NL * PX8NL / PX7NL
                    + X7NL_DE
                    + X7NL_BE
                    + X7NL_FR
                    + X7NL_UK
                    + X7NL_IT
                    + X7NL_CN
                    + X7NL_JP
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                + X7NL_US;
MKT_X8NL..    X8NL + X8DE_NL + X8BE_NL + X8FR_NL + X8UK_NL + X8IT_NL + X8CN_NL + X8JP_NL + X8US_NL =G= WNL * phi8NL * PWNL / PX8NL
                + (1-alphaL2_NL-alphaK2_NL-alpha92_NL-alpha62_NL) * X2NL * PX2NL / PX8NL
                + (1-alphaL7_NL-alphaK7_NL-alpha97_NL-alpha67_NL) * X7NL * PX7NL / PX8NL
                + alpha89_NL * X9NL * PX9NL / PX8NL
                + X8NL_DE
                + X8NL_BE
                + X8NL_FR
                + X8NL_UK
                + X8NL_IT
                + X8NL_CN
                + X8NL_JP
                + X8NL_US;
MKT_X9NL..    X9NL + X9DE_NL + X9BE_NL + X9FR_NL + X9UK_NL + X9IT_NL + X9CN_NL + X9JP_NL + X9US_NL =G= WNL * (1-phi0NL-phi1NL-
phi2NL-phi3NL-phi5NL-phi6NL-phi7NL-phi8NL) * PWNL / PX9NL
                + alpha90_NL * X0NL * PX0NL / PX9NL
                + alpha91_NL * X1NL * PX1NL / PX9NL
                + alpha92_NL * X2NL * PX2NL / PX9NL
                + alpha93_NL * X3NL * PX3NL / PX9NL
                + alpha95_NL * X5NL * PX5NL / PX9NL
                + alpha96_NL * X6NL * PX6NL / PX9NL
                + alpha97_NL * X7NL * PX7NL / PX9NL
                + alpha98_NL * X8NL * PX8NL / PX9NL
                + X9NL_DE
                + X9NL_BE
                + X9NL_FR
                + X9NL_UK
                + X9NL_IT
                + X9NL_CN
                + X9NL_JP
                + X9NL_US;
MKT_WNL..      WNL * PWNL =E= CONSNL / 1;

*              FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LNL..     LNL =G=  alphaL0_NL * X0NL * PX0NL / PLNL + alphaL1_NL * X1NL * PX1NL / PLNL
                + alphaL2_NL * X2NL * PX2NL / PLNL
                + alphaL3_NL * X3NL * PX3NL / PLNL
                + alphaL5_NL * X5NL * PX5NL / PLNL
                + alphaL6_NL * X6NL * PX6NL / PLNL
                + alphaL7_NL * X7NL * PX7NL / PLNL
                + alphaL8_NL * X8NL * PX8NL / PLNL
                + alphaL9_NL * X9NL * PX9NL / PLNL;
MKT_KNL..     KNL =G=  (alphaK0_NL) * X0NL * PX0NL / PKNL
                + (alphaK1_NL) * X1NL * PX1NL / PKNL
                + (alphaK2_NL) * X2NL * PX2NL / PKNL
                + (alphaK3_NL) * X3NL * PX3NL / PKNL
                + (alphaK5_NL) * X5NL * PX5NL / PKNL
                + (alphaK6_NL) * X6NL * PX6NL / PKNL
                + (alphaK7_NL) * X7NL * PX7NL / PKNL
                + (alphaK8_NL) * X8NL * PX8NL / PKNL
                + (alphaK9_NL) * X9NL * PX9NL / PKNL;

*              DEFINITION OF INCOME

I_CONSNL..    CONSNL =E= LNL*PLNL + KNL*PKNL
                + TX0NL * PX0CN * X0CN_NL + TX1NL * PX1CN * X1CN_NL + TX2NL * PX2CN * X2CN_NL + TX3NL * PX3CN * X3CN_NL
                + TX5NL * PX5CN * X5CN_NL + TX6NL * PX6CN * X6CN_NL + TX7NL * PX7CN * X7CN_NL + TX8NL * PX8CN * X8CN_NL
                + TX9NL * PX9CN * X9CN_NL
                + TX0NL * PX0JP * X0JP_NL + TX1NL * PX1JP * X1JP_NL + TX2NL * PX2JP * X2JP_NL + TX3NL * PX3JP * X3JP_NL
                + TX5NL * PX5JP * X5JP_NL + TX6NL * PX6JP * X6JP_NL + TX7NL * PX7JP * X7JP_NL + TX8NL * PX8JP * X8JP_NL
                + TX9NL * PX9JP * X9JP_NL
                + TX0NL * PX0US * X0US_NL + TX1NL * PX1US * X1US_NL + TX2NL * PX2US * X2US_NL + TX3NL * PX3US * X3US_NL
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+ TX5NL * PX5US * X5US_NL + TX6NL * PX6US * X6US_NL + TX7NL * PX7US * X7US_NL + TX8NL * PX8US * X8US_NL
+ TX9NL * PX9US * X9US_NL;

*   ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_NL.. TOT_IMP_0_NL =E= X0DE_NL + X0BE_NL + X0FR_NL + X0UK_NL + X0IT_NL + X0CN_NL + X0JP_NL + X0US_NL;
I_TOT_EXP_0_NL.. TOT_EXP_0_NL =E= X0NL_DE + X0NL_BE + X0NL_FR + X0NL_UK + X0NL_IT + X0NL_CN + X0NL_JP + X0NL_US;
I_NET_EXP_0_NL.. NET_EXP_0_NL =E= TOT_EXP_0_NL - TOT_IMP_0_NL;
I_TOT_IMP_1_NL.. TOT_IMP_1_NL =E= X1DE_NL + X1BE_NL + X1FR_NL + X1UK_NL + X1IT_NL + X1CN_NL + X1JP_NL + X1US_NL;
I_TOT_EXP_1_NL.. TOT_EXP_1_NL =E= X1NL_DE + X1NL_BE + X1NL_FR + X1NL_UK + X1NL_IT + X1NL_CN + X1NL_JP + X1NL_US;
I_NET_EXP_1_NL.. NET_EXP_1_NL =E= TOT_EXP_1_NL - TOT_IMP_1_NL;
I_TOT_IMP_2_NL.. TOT_IMP_2_NL =E= X2DE_NL + X2BE_NL + X2FR_NL + X2UK_NL + X2IT_NL + X2CN_NL + X2JP_NL + X2US_NL;
I_TOT_EXP_2_NL.. TOT_EXP_2_NL =E= X2NL_DE + X2NL_BE + X2NL_FR + X2NL_UK + X2NL_IT + X2NL_CN + X2NL_JP + X2NL_US;
I_NET_EXP_2_NL.. NET_EXP_2_NL =E= TOT_EXP_2_NL - TOT_IMP_2_NL;
I_TOT_IMP_3_NL.. TOT_IMP_3_NL =E= X3DE_NL + X3BE_NL + X3FR_NL + X3UK_NL + X3IT_NL + X3CN_NL + X3JP_NL + X3US_NL;
I_TOT_EXP_3_NL.. TOT_EXP_3_NL =E= X3NL_DE + X3NL_BE + X3NL_FR + X3NL_UK + X3NL_IT + X3NL_CN + X3NL_JP + X3NL_US;
I_NET_EXP_3_NL.. NET_EXP_3_NL =E= TOT_EXP_3_NL - TOT_IMP_3_NL;
I_TOT_IMP_5_NL.. TOT_IMP_5_NL =E= X5DE_NL + X5BE_NL + X5FR_NL + X5UK_NL + X5IT_NL + X5CN_NL + X5JP_NL + X5US_NL;
I_TOT_EXP_5_NL.. TOT_EXP_5_NL =E= X5NL_DE + X5NL_BE + X5NL_FR + X5NL_UK + X5NL_IT + X5NL_CN + X5NL_JP + X5NL_US;
I_NET_EXP_5_NL.. NET_EXP_5_NL =E= TOT_EXP_5_NL - TOT_IMP_5_NL;
I_TOT_IMP_6_NL.. TOT_IMP_6_NL =E= X6DE_NL + X6BE_NL + X6FR_NL + X6UK_NL + X6IT_NL + X6CN_NL + X6JP_NL + X6US_NL;
I_TOT_EXP_6_NL.. TOT_EXP_6_NL =E= X6NL_DE + X6NL_BE + X6NL_FR + X6NL_UK + X6NL_IT + X6NL_CN + X6NL_JP + X6NL_US;
I_NET_EXP_6_NL.. NET_EXP_6_NL =E= TOT_EXP_6_NL - TOT_IMP_6_NL;
I_TOT_IMP_7_NL.. TOT_IMP_7_NL =E= X7DE_NL + X7BE_NL + X7FR_NL + X7UK_NL + X7IT_NL + X7CN_NL + X7JP_NL + X7US_NL;
I_TOT_EXP_7_NL.. TOT_EXP_7_NL =E= X7NL_DE + X7NL_BE + X7NL_FR + X7NL_UK + X7NL_IT + X7NL_CN + X7NL_JP + X7NL_US;
I_NET_EXP_7_NL.. NET_EXP_7_NL =E= TOT_EXP_7_NL - TOT_IMP_7_NL;
I_TOT_IMP_8_NL.. TOT_IMP_8_NL =E= X8DE_NL + X8BE_NL + X8FR_NL + X8UK_NL + X8IT_NL + X8CN_NL + X8JP_NL + X8US_NL;
I_TOT_EXP_8_NL.. TOT_EXP_8_NL =E= X8NL_DE + X8NL_BE + X8NL_FR + X8NL_UK + X8NL_IT + X8NL_CN + X8NL_JP + X8NL_US;
I_NET_EXP_8_NL.. NET_EXP_8_NL =E= TOT_EXP_8_NL - TOT_IMP_8_NL;
I_TOT_IMP_9_NL.. TOT_IMP_9_NL =E= X9DE_NL + X9BE_NL + X9FR_NL + X9UK_NL + X9IT_NL + X9CN_NL + X9JP_NL + X9US_NL;
I_TOT_EXP_9_NL.. TOT_EXP_9_NL =E= X9NL_DE + X9NL_BE + X9NL_FR + X9NL_UK + X9NL_IT + X9NL_CN + X9NL_JP + X9NL_US;
I_NET_EXP_9_NL.. NET_EXP_9_NL =E= TOT_EXP_9_NL - TOT_IMP_9_NL;
I_TARIFF_INC_NL.. TARIFF_INC_NL =E= TX0NL * PX0CN * X0CN_NL + TX1NL * PX1CN * X1CN_NL + TX2NL * PX2CN * X2CN_NL + TX3NL * PX3CN * X3CN_NL
+ TX5NL * PX5CN * X5CN_NL + TX6NL * PX6CN * X6CN_NL + TX7NL * PX7CN * X7CN_NL + TX8NL * PX8CN * X8CN_NL
+ TX9NL * PX9CN * X9CN_NL
+ TX0NL * PX0JP * X0JP_NL + TX1NL * PX1JP * X1JP_NL + TX2NL * PX2JP * X2JP_NL + TX3NL * PX3JP * X3JP_NL
+ TX5NL * PX5JP * X5JP_NL + TX6NL * PX6JP * X6JP_NL + TX7NL * PX7JP * X7JP_NL + TX8NL * PX8JP * X8JP_NL
+ TX9NL * PX9JP * X9JP_NL
+ TX0NL * PX0US * X0US_NL + TX1NL * PX1US * X1US_NL + TX2NL * PX2US * X2US_NL + TX3NL * PX3US * X3US_NL
+ TX5NL * PX5US * X5US_NL + TX6NL * PX6US * X6US_NL + TX7NL * PX7US * X7US_NL + TX8NL * PX8US * X8US_NL
+ TX9NL * PX9US * X9US_NL;

*   GERMANY

*   ZERO PROFIT CONDITIONS

PRF_X0DE.. PLDE**(alphaL0_DE) * PKDE**(alphaK0_DE) * PX9DE**(alpha90_DE) * PX1DE**(alpha10_DE)
           * PX7DE**(1-alphaL0_DE-alphaK0_DE-alpha90_DE-alpha10_DE) =G= PX0DE;
PRF_X1DE.. PLDE**(alphaL1_DE) * PKDE**(alphaK1_DE) * PX9DE**(alpha91_DE) * PX0DE**(alpha01_DE)
           * PX6DE**(1-alphaL1_DE-alphaK1_DE-alpha91_DE-alpha01_DE) =G= PX1DE;
PRF_X2DE.. PLDE**(alphaL2_DE) * PKDE**(alphaK2_DE) * PX9DE**(alpha92_DE) * PX6DE**(alpha62_DE)
           * PX8DE**(1-alphaL2_DE-alphaK2_DE-alpha92_DE-alpha62_DE) =G= PX2DE;
PRF_X3DE.. PLDE**(alphaL3_DE) * PKDE**(alphaK3_DE) * PX9DE**(alpha93_DE) * PX2DE**(alpha23_DE)
           * PX5DE**(1-alphaL3_DE-alphaK3_DE-alpha93_DE-alpha23_DE) =G= PX3DE;
PRF_X5DE.. PLDE**(alphaL5_DE) * PKDE**(alphaK5_DE) * PX9DE**(alpha95_DE) * PX6DE**(alpha65_DE)
           * PX3DE**(1-alphaL5_DE-alphaK5_DE-alpha95_DE-alpha65_DE) =G= PX5DE;
PRF_X6DE.. PLDE**(alphaL6_DE) * PKDE**(alphaK6_DE) * PX9DE**(alpha96_DE) * PX5DE**(alpha56_DE)
           * PX2DE**(1-alphaL6_DE-alphaK6_DE-alpha96_DE-alpha56_DE) =G= PX6DE;
PRF_X7DE.. PLDE**(alphaL7_DE) * PKDE**(alphaK7_DE) * PX9DE**(alpha97_DE) * PX6DE**(alpha67_DE)
           * PX8DE**(1-alphaL7_DE-alphaK7_DE-alpha97_DE-alpha67_DE) =G= PX7DE;
PRF_X8DE.. PLDE**(alphaL8_DE) * PKDE**(alphaK8_DE) * PX9DE**(alpha98_DE) * PX6DE**(alpha68_DE)
           * PX7DE**(1-alphaL8_DE-alphaK8_DE-alpha98_DE-alpha68_DE) =G= PX8DE;

PRF_X9DE..   PLDE**(alphaL9_DE) * PKDE**(alphaK9_DE) * PX6DE**(alpha69_DE) * PX8DE**(alpha89_DE)
             * PX7DE**(1-alphaL9_DE-alphaK9_DE-alpha69_DE-alpha89_DE) =G= PX9DE;
PRF_WDE..   PX0DE**(phi0DE) * PX1DE**(phi1DE) * PX2DE**(phi2DE) * PX3DE**(phi3DE) * PX5DE**(phi5DE)* PX6DE**(phi6DE)
         * PX7DE**(phi7DE) * PX8DE**(phi8DE) * PX9DE**(1-phi0DE-phi1DE-phi2DE-phi3DE-phi5DE-phi6DE-phi7DE-phi8DE) =G= PWDE;

*   GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0DE..   X0DE + X0NL_DE + X0BE_DE + X0FR_DE + X0UK_DE + X0IT_DE + X0CN_DE + X0JP_DE + X0US_DE =G= WDE * phi0DE * PWDE / PX0DE
             + alpha01_DE * X1DE * PX1DE / PX0DE
             + X0DE_NL
             + X0DE_BE
             + X0DE_FR
             + X0DE_UK
             + X0DE_IT
             + X0DE_CN
             + X0DE_JP
             + X0DE_US;
MKT_X1DE..   X1DE + X1NL_DE + X1BE_DE + X1FR_DE + X1UK_DE + X1IT_DE + X1CN_DE + X1JP_DE + X1US_DE =G= WDE * phi1DE * PWDE / PX1DE
             + alpha10_DE * X0DE * PX0DE / PX1DE
             + X1DE_NL
             + X1DE_BE
             + X1DE_FR
             + X1DE_UK
             + X1DE_IT
             + X1DE_CN
             + X1DE_JP
             + X1DE_US;
MKT_X2DE..   X2DE + X2NL_DE + X2BE_DE + X2FR_DE + X2UK_DE + X2IT_DE + X2CN_DE + X2JP_DE + X2US_DE =G= WDE * phi2DE * PWDE / PX2DE
             + alpha23_DE * X3DE * PX3DE / PX2DE
             + (1-alphaL6_DE-alphaK6_DE-alpha96_DE-alpha56_DE) * X6DE * PX6DE / PX2DE
             + X2DE_NL
             + X2DE_BE
             + X2DE_FR
             + X2DE_UK
             + X2DE_IT
             + X2DE_CN
             + X2DE_JP
             + X2DE_US;
MKT_X3DE..   X3DE + X3NL_DE + X3BE_DE + X3FR_DE + X3UK_DE + X3IT_DE + X3CN_DE + X3JP_DE + X3US_DE =G= WDE * phi3DE * PWDE / PX3DE
             + (1-alphaL5_DE-alphaK5_DE-alpha95_DE-alpha65_DE) * X5DE * PX5DE / PX3DE
             + X3DE_NL
             + X3DE_BE
             + X3DE_FR
             + X3DE_UK
             + X3DE_IT
             + X3DE_CN
             + X3DE_JP
             + X3DE_US;
MKT_X5DE..   X5DE + X5NL_DE + X5BE_DE + X5FR_DE + X5UK_DE + X5IT_DE + X5CN_DE + X5JP_DE + X5US_DE =G= WDE * phi5DE * PWDE / PX5DE
             + (1-alphaL3_DE-alphaK3_DE-alpha93_DE-alpha23_DE) * X3DE * PX3DE / PX5DE
             + alpha56_DE * X6DE * PX6DE / PX5DE
             + X5DE_NL
             + X5DE_BE
             + X5DE_FR
             + X5DE_UK
             + X5DE_IT
             + X5DE_CN
             + X5DE_JP
             + X5DE_US;
MKT_X6DE..   X6DE + X6NL_DE + X6BE_DE + X6FR_DE + X6UK_DE + X6IT_DE + X6CN_DE + X6JP_DE + X6US_DE =G= WDE * phi6DE * PWDE / PX6DE
             + (1-alphaL1_DE-alphaK1_DE-alpha91_DE-alpha01_DE) * X1DE * PX1DE / PX6DE
             + alpha62_DE * X2DE * PX2DE / PX6DE
             + alpha65_DE * X5DE * PX5DE / PX6DE

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                + alpha67_DE * X7DE * PX7DE / PX6DE
                + alpha68_DE * X8DE * PX8DE / PX6DE
                + alpha69_DE * X9DE * PX9DE / PX6DE
                + X6DE_NL
                + X6DE_BE
                + X6DE_FR
                + X6DE_UK
                + X6DE_IT
                + X6DE_CN
                + X6DE_JP
                + X6DE_US;
MKT_X7DE..   X7DE + X7NL_DE + X7BE_DE + X7FR_DE + X7UK_DE + X7IT_DE + X7CN_DE + X7JP_DE + X7US_DE =G= WDE * phi7DE * PWDE / PX7DE
                + (1-alphaL0_DE-alphaK0_DE-alpha90_DE-alpha10_DE) * X0DE * PX0DE / PX7DE
                + (1-alphaL8_DE-alphaK8_DE-alpha98_DE-alpha68_DE) * X8DE * PX8DE / PX7DE
                + (1-alphaL9_DE-alphaK9_DE-alpha69_DE-alpha89_DE) * X9DE * PX9DE / PX7DE
                + X7DE_NL
                + X7DE_BE
                + X7DE_FR
                + X7DE_UK
                + X7DE_IT
                + X7DE_CN
                + X7DE_JP
                + X7DE_US;
MKT_X8DE..   X8DE + X8NL_DE + X8BE_DE + X8FR_DE + X8UK_DE + X8IT_DE + X8CN_DE + X8JP_DE + X8US_DE =G= WDE * phi8DE * PWDE / PX8DE
                + (1-alphaL2_DE-alphaK2_DE-alpha92_DE-alpha62_DE) * X2DE * PX2DE / PX8DE
                + (1-alphaL7_DE-alphaK7_DE-alpha97_DE-alpha67_DE) * X7DE * PX7DE / PX8DE
                + alpha89_DE * X9DE * PX9DE / PX8DE
                + X8DE_NL
                + X8DE_BE
                + X8DE_FR
                + X8DE_UK
                + X8DE_IT
                + X8DE_CN
                + X8DE_JP
                + X8DE_US;
MKT_X9DE..   X9DE + X9NL_DE + X9BE_DE + X9FR_DE + X9UK_DE + X9IT_DE + X9CN_DE + X9JP_DE + X9US_DE =G= WDE * (1-phi0DE-phi1DE-
phi2DE-phi3DE-phi5DE-phi6DE-phi7DE-phi8DE) * PWDE / PX9DE
                + alpha90_DE * X0DE * PX0DE / PX9DE
                + alpha91_DE * X1DE * PX1DE / PX9DE
                + alpha92_DE * X2DE * PX2DE / PX9DE
                + alpha93_DE * X3DE * PX3DE / PX9DE
                + alpha95_DE * X5DE * PX5DE / PX9DE
                + alpha96_DE * X6DE * PX6DE / PX9DE
                + alpha97_DE * X7DE * PX7DE / PX9DE
                + alpha98_DE * X8DE * PX8DE / PX9DE
                + X9DE_NL
                + X9DE_BE
                + X9DE_FR
                + X9DE_UK
                + X9DE_IT
                + X9DE_CN
                + X9DE_JP
                + X9DE_US;
MKT_WDE..     WDE * PWDE =E= CONSDE / 1;


*            FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LDE..    LDE =G=  alphaL0_DE * X0DE * PX0DE / PLDE
                + alphaL1_DE * X1DE * PX1DE / PLDE
                + alphaL2_DE * X2DE * PX2DE / PLDE
                + alphaL3_DE * X3DE * PX3DE / PLDE
                + alphaL5_DE * X5DE * PX5DE / PLDE
                + alphaL6_DE * X6DE * PX6DE / PLDE
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                   + alphaL7_DE * X7DE * PX7DE / PLDE
                   + alphaL8_DE * X8DE * PX8DE / PLDE
                   + alphaL9_DE * X9DE * PX9DE / PLDE;
MKT_KDE..    KDE =G= (alphaK0_DE) * X0DE * PX0DE / PKDE
                   + (alphaK1_DE) * X1DE * PX1DE / PKDE
                   + (alphaK2_DE) * X2DE * PX2DE / PKDE
                   + (alphaK3_DE) * X3DE * PX3DE / PKDE
                   + (alphaK5_DE) * X5DE * PX5DE / PKDE
                   + (alphaK6_DE) * X6DE * PX6DE / PKDE
                   + (alphaK7_DE) * X7DE * PX7DE / PKDE
                   + (alphaK8_DE) * X8DE * PX8DE / PKDE
                   + (alphaK9_DE) * X9DE * PX9DE / PKDE;


*              DEFINITION OF INCOME

I_CONSDE..   CONSDE =E= LDE*PLDE + KDE*PKDE
             + TX0DE * PX0CN * X0CN_DE + TX1DE * PX1CN * X1CN_DE + TX2DE * PX2CN * X2CN_DE + TX3CN * PX3CN * X3CN_DE
             + TX5DE * PX5CN * X5CN_DE + TX6DE * PX6CN * X6CN_DE + TX7DE * PX7CN * X7CN_DE + TX8CN * PX8CN * X8CN_DE
             + TX9DE * PX9CN * X9CN_DE
             + TX0DE * PX0JP * X0JP_DE + TX1DE * PX1JP * X1JP_DE + TX2DE * PX2JP * X2JP_DE + TX3JP * PX3JP * X3JP_DE
             + TX5DE * PX5JP * X5JP_DE + TX6DE * PX6JP * X6JP_DE + TX7DE * PX7JP * X7JP_DE + TX8JP * PX8JP * X8JP_DE
             + TX9DE * PX9JP * X9JP_DE
             + TX0DE * PX0US * X0US_DE + TX1DE * PX1US * X1US_DE + TX2DE * PX2US * X2US_DE + TX3US * PX3US * X3US_DE
             + TX5DE * PX5US * X5US_DE + TX6DE * PX6US * X6US_DE + TX7DE * PX7US * X7US_DE + TX8US * PX8US * X8US_DE
             + TX9DE * PX9US * X9US_DE;

*              ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_DE.. TOT_IMP_0_DE =E= X0NL_DE + X0BE_DE + X0FR_DE + X0UK_DE + X0IT_DE + X0CN_DE + X0JP_DE + X0US_DE;
I_TOT_EXP_0_DE.. TOT_EXP_0_DE =E= X0DE_NL + X0DE_BE + X0DE_FR + X0DE_UK + X0DE_IT + X0DE_CN + X0DE_JP + X0DE_US;
I_NET_EXP_0_DE.. NET_EXP_0_DE =E= TOT_EXP_0_DE - TOT_IMP_0_DE;
I_TOT_IMP_1_DE.. TOT_IMP_1_DE =E= X1NL_DE + X1BE_DE + X1FR_DE + X1UK_DE + X1IT_DE + X1CN_DE + X1JP_DE + X1US_DE;
I_TOT_EXP_1_DE.. TOT_EXP_1_DE =E= X1DE_NL + X1DE_BE + X1DE_FR + X1DE_UK + X1DE_IT + X1DE_CN + X1DE_JP + X1DE_US;
I_NET_EXP_1_DE.. NET_EXP_1_DE =E= TOT_EXP_1_DE - TOT_IMP_1_DE;
I_TOT_IMP_2_DE.. TOT_IMP_2_DE =E= X2NL_DE + X2BE_DE + X2FR_DE + X2UK_DE + X2IT_DE + X2CN_DE + X2JP_DE + X2US_DE;
I_TOT_EXP_2_DE.. TOT_EXP_2_DE =E= X2DE_NL + X2DE_BE + X2DE_FR + X2DE_UK + X2DE_IT + X2DE_CN + X2DE_JP + X2DE_US;
I_NET_EXP_2_DE.. NET_EXP_2_DE =E= TOT_EXP_2_DE - TOT_IMP_2_DE;
I_TOT_IMP_3_DE.. TOT_IMP_3_DE =E= X3NL_DE + X3BE_DE + X3FR_DE + X3UK_DE + X3IT_DE + X3CN_DE + X3JP_DE + X3US_DE;
I_TOT_EXP_3_DE.. TOT_EXP_3_DE =E= X3DE_NL + X3DE_BE + X3DE_FR + X3DE_UK + X3DE_IT + X3DE_CN + X3DE_JP + X3DE_US;
I_NET_EXP_3_DE.. NET_EXP_3_DE =E= TOT_EXP_3_DE - TOT_IMP_3_DE;
I_TOT_IMP_5_DE.. TOT_IMP_5_DE =E= X5NL_DE + X5BE_DE + X5FR_DE + X5UK_DE + X5IT_DE + X5CN_DE + X5JP_DE + X5US_DE;
I_TOT_EXP_5_DE.. TOT_EXP_5_DE =E= X5DE_NL + X5DE_BE + X5DE_FR + X5DE_UK + X5DE_IT + X5DE_CN + X5DE_JP + X5DE_US;
I_NET_EXP_5_DE.. NET_EXP_5_DE =E= TOT_EXP_5_DE - TOT_IMP_5_DE;
I_TOT_IMP_6_DE.. TOT_IMP_6_DE =E= X6NL_DE + X6BE_DE + X6FR_DE + X6UK_DE + X6IT_DE + X6CN_DE + X6JP_DE + X6US_DE;
I_TOT_EXP_6_DE.. TOT_EXP_6_DE =E= X6DE_NL + X6DE_BE + X6DE_FR + X6DE_UK + X6DE_IT + X6DE_CN + X6DE_JP + X6DE_US;
I_NET_EXP_6_DE.. NET_EXP_6_DE =E= TOT_EXP_6_DE - TOT_IMP_6_DE;
I_TOT_IMP_7_DE.. TOT_IMP_7_DE =E= X7NL_DE + X7BE_DE + X7FR_DE + X7UK_DE + X7IT_DE + X7CN_DE + X7JP_DE + X7US_DE;
I_TOT_EXP_7_DE.. TOT_EXP_7_DE =E= X7DE_NL + X7DE_BE + X7DE_FR + X7DE_UK + X7DE_IT + X7DE_CN + X7DE_JP + X7DE_US;
I_NET_EXP_7_DE.. NET_EXP_7_DE =E= TOT_EXP_7_DE - TOT_IMP_7_DE;
I_TOT_IMP_8_DE.. TOT_IMP_8_DE =E= X8NL_DE + X8BE_DE + X8FR_DE + X8UK_DE + X8IT_DE + X8CN_DE + X8JP_DE + X8US_DE;
I_TOT_EXP_8_DE.. TOT_EXP_8_DE =E= X8DE_NL + X8DE_BE + X8DE_FR + X8DE_UK + X8DE_IT + X8DE_CN + X8DE_JP + X8DE_US;
I_NET_EXP_8_DE.. NET_EXP_8_DE =E= TOT_EXP_8_DE - TOT_IMP_8_DE;
I_TOT_IMP_9_DE.. TOT_IMP_9_DE =E= X9NL_DE + X9BE_DE + X9FR_DE + X9UK_DE + X9IT_DE + X9CN_DE + X9JP_DE + X9US_DE;
I_TOT_EXP_9_DE.. TOT_EXP_9_DE =E= X9DE_NL + X9DE_BE + X9DE_FR + X9DE_UK + X9DE_IT + X9DE_CN + X9DE_JP + X9DE_US;
I_NET_EXP_9_DE.. NET_EXP_9_DE =E= TOT_EXP_9_DE - TOT_IMP_9_DE;
I_TARIFF_INC_DE.. TARIFF_INC_DE =E= TX0DE * PX0CN * X0CN_DE + TX1DE * PX1CN * X1CN_DE + TX2DE * PX2CN * X2CN_DE + TX3CN * PX3CN *
X3CN_DE
             + TX5DE * PX5CN * X5CN_DE + TX6DE * PX6CN * X6CN_DE + TX7DE * PX7CN * X7CN_DE + TX8CN * PX8CN * X8CN_DE
             + TX9DE * PX9CN * X9CN_DE
             + TX0DE * PX0JP * X0JP_DE + TX1DE * PX1JP * X1JP_DE + TX2DE * PX2JP * X2JP_DE + TX3JP * PX3JP * X3JP_DE
             + TX5DE * PX5JP * X5JP_DE + TX6DE * PX6JP * X6JP_DE + TX7DE * PX7JP * X7JP_DE + TX8JP * PX8JP * X8JP_DE
             + TX9DE * PX9JP * X9JP_DE
             + TX0DE * PX0US * X0US_DE + TX1DE * PX1US * X1US_DE + TX2DE * PX2US * X2US_DE + TX3US * PX3US * X3US_DE
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+ TX5DE * PX5US * X5US_DE + TX6DE * PX6US * X6US_DE + TX7DE * PX7US * X7US_DE + TX8US * PX8US * X8US_DE
+ TX9DE * PX9US * X9US_DE;

*   BELGIUM

*   ZERO PROFIT CONDITIONS

PRF_X0BE..   PLBE**(alphaL0_BE) * PKBE**(alphaK0_BE) * PX9BE**(alpha90_BE) * PX1BE**(alpha10_BE)
           * PX5BE**(1-alphaL0_BE-alphaK0_BE-alpha90_BE-alpha10_BE) =G= PX0BE;
PRF_X1BE..   PLBE**(alphaL1_BE) * PKBE**(alphaK1_BE) * PX9BE**(alpha91_BE) * PX0BE**(alpha01_BE)
           * PX6BE**(1-alphaL1_BE-alphaK1_BE-alpha91_BE-alpha01_BE) =G= PX1BE;
PRF_X2BE..   PLBE**(alphaL2_BE) * PKBE**(alphaK2_BE) * PX9BE**(alpha92_BE) * PX8BE**(alpha82_BE)
           * PX6BE**(1-alphaL2_BE-alphaK2_BE-alpha92_BE-alpha82_BE) =G= PX2BE;
PRF_X3BE..   PLBE**(alphaL3_BE) * PKBE**(alphaK3_BE) * PX9BE**(alpha93_BE) * PX2BE**(alpha23_BE)
           * PX5BE**(1-alphaL3_BE-alphaK3_BE-alpha93_BE-alpha23_BE) =G= PX3BE;
PRF_X5BE..   PLBE**(alphaL5_BE) * PKBE**(alphaK5_BE) * PX9BE**(alpha95_BE) * PX3BE**(alpha35_BE)
           * PX6BE**(1-alphaL5_BE-alphaK5_BE-alpha95_BE-alpha35_BE) =G= PX5BE;
PRF_X6BE..   PLBE**(alphaL6_BE) * PKBE**(alphaK6_BE) * PX9BE**(alpha96_BE) * PX5BE**(alpha56_BE)
           * PX8BE**(1-alphaL6_BE-alphaK6_BE-alpha96_BE-alpha56_BE) =G= PX6BE;
PRF_X7BE..   PLBE**(alphaL7_BE) * PKBE**(alphaK7_BE) * PX9BE**(alpha97_BE) * PX6BE**(alpha67_BE)
           * PX8BE**(1-alphaL7_BE-alphaK7_BE-alpha97_BE-alpha67_BE) =G= PX7BE;
PRF_X8BE..   PLBE**(alphaL8_BE) * PKBE**(alphaK8_BE) * PX9BE**(alpha98_BE) * PX6BE**(alpha68_BE)
           * PX5BE**(1-alphaL8_BE-alphaK8_BE-alpha98_BE-alpha68_BE) =G= PX8BE;
PRF_X9BE..   PLBE**(alphaL9_BE) * PKBE**(alphaK9_BE) * PX6BE**(alpha69_BE) * PX5BE**(alpha59_BE)
           * PX8BE**(1-alphaL9_BE-alphaK9_BE-alpha69_BE-alpha59_BE) =G= PX9BE;
PRF_WBE..   PX0BE**(phi0BE) * PX1BE**(phi1BE) * PX2BE**(phi2BE) * PX3BE**(phi3BE) * PX5BE**(phi5BE)* PX6BE**(phi6BE)
           * PX7BE**(phi7BE) * PX8BE**(phi8BE) * PX9BE**(1-phi0BE-phi1BE-phi2BE-phi3BE-phi5BE-phi6BE-phi7BE-phi8BE) =G= PWBE;

*   GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0BE..   X0BE + X0NL_BE + X0DE_BE + X0FR_BE + X0UK_BE + X0IT_BE + X0CN_BE + X0JP_BE + X0US_BE =G= WBE * phi0BE * PWBE / PX0BE
           + alpha01_BE * X1BE * PX1BE / PX0BE
           + X0BE_NL
           + X0BE_DE
           + X0BE_FR
           + X0BE_UK
           + X0BE_IT
           + X0BE_CN
           + X0BE_JP
           + X0BE_US;
MKT_X1BE..   X1BE + X1NL_BE + X1DE_BE + X1FR_BE + X1UK_BE + X1IT_BE + X1CN_BE + X1JP_BE + X1US_BE =G= WBE * phi1BE * PWBE / PX1BE
           + alpha10_BE * X0BE * PX0BE / PX1BE
           + X1BE_NL
           + X1BE_DE
           + X1BE_FR
           + X1BE_UK
           + X1BE_IT
           + X1BE_CN
           + X1BE_JP
           + X1BE_US;
MKT_X2BE..   X2BE + X2NL_BE + X2DE_BE + X2FR_BE + X2UK_BE + X2IT_BE + X2CN_BE + X2JP_BE + X2US_BE =G= WBE * phi2BE * PWBE / PX2BE
           + alpha23_BE * X3BE * PX3BE / PX2BE
           + X2BE_NL
           + X2BE_DE
           + X2BE_FR
           + X2BE_UK
           + X2BE_IT
           + X2BE_CN
           + X2BE_JP
           + X2BE_US;
MKT_X3BE..   X3BE + X3NL_BE + X3DE_BE + X3FR_BE + X3UK_BE + X3IT_BE + X3CN_BE + X3JP_BE + X3US_BE =G= WBE * phi3BE * PWBE / PX3BE
           + alpha35_BE * X5BE * PX5BE / PX3BE
           + X3BE_NL

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                + X3BE_DE
                + X3BE_FR
                + X3BE_UK
                + X3BE_IT
                + X3BE_CN
                + X3BE_JP
                + X3BE_US;
MKT_X5BE..   X5BE + X5NL_BE + X5DE_BE + X5FR_BE + X5UK_BE + X5IT_BE + X5CN_BE + X5JP_BE + X5US_BE =G= WBE * phi5BE * PWBE / PX5BE
                + (1-alphaL0_BE-alphaK0_BE-alpha90_BE-alpha10_BE) * X0BE * PX0BE / PX5BE
                + (1-alphaL3_BE-alphaK3_BE-alpha93_BE-alpha23_BE) * X3BE * PX3BE / PX5BE
                + alpha56_BE * X6BE * PX6BE / PX5BE
                + (1-alphaL8_BE-alphaK8_BE-alpha98_BE-alpha68_BE) * X8BE * PX8BE / PX5BE
                + alpha59_BE * X9BE * PX9BE / PX5BE
                + X5BE_NL
                + X5BE_DE
                + X5BE_FR
                + X5BE_UK
                + X5BE_IT
                + X5BE_CN
                + X5BE_JP
                + X5BE_US;
MKT_X6BE..   X6BE + X6NL_BE + X6DE_BE + X6FR_BE + X6UK_BE + X6IT_BE + X6CN_BE + X6JP_BE + X6US_BE =G= WBE * phi6BE * PWBE / PX6BE
                + (1-alphaL1_BE-alphaK1_BE-alpha91_BE-alpha01_BE) * X1BE * PX1BE / PX6BE
                + (1-alphaL2_BE-alphaK2_BE-alpha92_BE-alpha82_BE) * X2BE * PX2BE / PX6BE
                + (1-alphaL5_BE-alphaK5_BE-alpha95_BE-alpha35_BE) * X5BE * PX5BE / PX6BE
                + alpha67_BE * X7BE * PX7BE / PX6BE
                + alpha68_BE * X8BE * PX8BE / PX6BE
                + alpha69_BE * X9BE * PX9BE / PX6BE
                + X6BE_NL
                + X6BE_DE
                + X6BE_FR
                + X6BE_UK
                + X6BE_IT
                + X6BE_CN
                + X6BE_JP
                + X6BE_US;
MKT_X7BE..   X7BE + X7NL_BE + X7DE_BE + X7FR_BE + X7UK_BE + X7IT_BE + X7CN_BE + X7JP_BE + X7US_BE =G= WBE * phi7BE * PWBE / PX7BE
                + X7BE_NL
                + X7BE_DE
                + X7BE_FR
                + X7BE_UK
                + X7BE_IT
                + X7BE_CN
                + X7BE_JP
                + X7BE_US;
MKT_X8BE..   X8BE + X8NL_BE + X8DE_BE + X8FR_BE + X8UK_BE + X8IT_BE + X8CN_BE + X8JP_BE + X8US_BE =G= WBE * phi8BE * PWBE / PX8BE
                + alpha82_BE * X2BE * PX2BE / PX8BE
                + (1-alphaL6_BE-alphaK6_BE-alpha96_BE-alpha56_BE) * X6BE * PX6BE / PX8BE
                + (1-alphaL7_BE-alphaK7_BE-alpha97_BE-alpha67_BE) * X7BE * PX7BE / PX8BE
                + (1-alphaL9_BE-alphaK9_BE-alpha69_BE-alpha59_BE) * X9BE * PX9BE / PX8BE
                + X8BE_NL
                + X8BE_DE
                + X8BE_FR
                + X8BE_UK
                + X8BE_IT
                + X8BE_CN
                + X8BE_JP
                + X8BE_US;
MKT_X9BE..   X9BE + X9NL_BE + X9DE_BE + X9FR_BE + X9UK_BE + X9IT_BE + X9CN_BE + X9JP_BE + X9US_BE =G= WBE * (1-phi0BE-phi1BE-phi2BE-
phi3BE-phi5BE-phi6BE-phi7BE-phi8BE) * PWBE / PX9BE
                + alpha90_BE * X0BE * PX0BE / PX9BE
                + alpha91_BE * X1BE * PX1BE / PX9BE
                + alpha92_BE * X2BE * PX2BE / PX9BE
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                        + alpha93_BE * X3BE * PX3BE / PX9BE
                        + alpha95_BE * X5BE * PX5BE / PX9BE
                        + alpha96_BE * X6BE * PX6BE / PX9BE
                        + alpha97_BE * X7BE * PX7BE / PX9BE
                        + alpha98_BE * X8BE * PX8BE / PX9BE
                        + X9BE_NL
                        + X9BE_DE
                        + X9BE_FR
                        + X9BE_UK
                        + X9BE_IT
                        + X9BE_CN
                        + X9BE_JP
                        + X9BE_US;
MKT_WBE..    WBE * PWBE =E= CONSBE / 1;


*            FACTOR MARKET EQUILIBRIUM CONDITIONS


MKT_LBE..    LBE =G=  alphaL0_BE * X0BE * PX0BE / PLBE
                        + alphaL1_BE * X1BE * PX1BE / PLBE
                        + alphaL2_BE * X2BE * PX2BE / PLBE
                        + alphaL3_BE * X3BE * PX3BE / PLBE
                        + alphaL5_BE * X5BE * PX5BE / PLBE
                        + alphaL6_BE * X6BE * PX6BE / PLBE
                        + alphaL7_BE * X7BE * PX7BE / PLBE
                        + alphaL8_BE * X8BE * PX8BE / PLBE
                        + alphaL9_BE * X9BE * PX9BE / PLBE;
MKT_KBE..    KBE =G=  (alphaK0_BE) * X0BE * PX0BE / PKBE
                        + (alphaK1_BE) * X1BE * PX1BE / PKBE
                        + (alphaK2_BE) * X2BE * PX2BE / PKBE
                        + (alphaK3_BE) * X3BE * PX3BE / PKBE
                        + (alphaK5_BE) * X5BE * PX5BE / PKBE
                        + (alphaK6_BE) * X6BE * PX6BE / PKBE
                        + (alphaK7_BE) * X7BE * PX7BE / PKBE
                        + (alphaK8_BE) * X8BE * PX8BE / PKBE
                        + (alphaK9_BE) * X9BE * PX9BE / PKBE;


*            DEFINITION OF INCOME


I_CONSBE..   CONSBE =E= LBE*PLBE + KBE*PKBE
                + TX0BE * PX0CN * X0CN_BE + TX1BE * PX1CN * X1CN_BE + TX2BE * PX2CN * X2CN_BE + TX3BE * PX3CN * X3CN_BE
                + TX5BE * PX5CN * X5CN_BE + TX6BE * PX6CN * X6CN_BE + TX7BE * PX7CN * X7CN_BE + TX8BE * PX8CN * X8CN_BE
                + TX9BE * PX9CN * X9CN_BE
                + TX0BE * PX0JP * X0JP_BE + TX1BE * PX1JP * X1JP_BE + TX2BE * PX2JP * X2JP_BE + TX3BE * PX3JP * X3JP_BE
                + TX5BE * PX5JP * X5JP_BE + TX6BE * PX6JP * X6JP_BE + TX7BE * PX7JP * X7JP_BE + TX8BE * PX8JP * X8JP_BE
                + TX9BE * PX9JP * X9JP_BE
                + TX0BE * PX0US * X0US_BE + TX1BE * PX1US * X1US_BE + TX2BE * PX2US * X2US_BE + TX3BE * PX3US * X3US_BE
                + TX5BE * PX5US * X5US_BE + TX6BE * PX6US * X6US_BE + TX7BE * PX7US * X7US_BE + TX8BE * PX8US * X8US_BE
                + TX9BE * PX9US * X9US_BE;



*            ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)


I_TOT_IMP_0_BE.. TOT_IMP_0_BE =E= X0NL_BE + X0DE_BE + X0FR_BE + X0UK_BE + X0IT_BE + X0CN_BE + X0JP_BE + X0US_BE;
I_TOT_EXP_0_BE.. TOT_EXP_0_BE =E= X0BE_NL + X0BE_DE + X0BE_FR + X0BE_UK + X0BE_IT + X0BE_CN + X0BE_JP + X0BE_US;
I_NET_EXP_0_BE.. NET_EXP_0_BE =E= TOT_EXP_0_BE - TOT_IMP_0_BE;
I_TOT_IMP_1_BE.. TOT_IMP_1_BE =E= X1NL_BE + X1DE_BE + X1FR_BE + X1UK_BE + X1IT_BE + X1CN_BE + X1JP_BE + X1US_BE;
I_TOT_EXP_1_BE.. TOT_EXP_1_BE =E= X1BE_NL + X1BE_DE + X1BE_FR + X1BE_UK + X1BE_IT + X1BE_CN + X1BE_JP + X1BE_US;
I_NET_EXP_1_BE.. NET_EXP_1_BE =E= TOT_EXP_1_BE - TOT_IMP_1_BE;
I_TOT_IMP_2_BE.. TOT_IMP_2_BE =E= X2NL_BE + X2DE_BE + X2FR_BE + X2UK_BE + X2IT_BE + X2CN_BE + X2JP_BE + X2US_BE;
I_TOT_EXP_2_BE.. TOT_EXP_2_BE =E= X2BE_NL + X2BE_DE + X2BE_FR + X2BE_UK + X2BE_IT + X2BE_CN + X2BE_JP + X2BE_US;
I_NET_EXP_2_BE.. NET_EXP_2_BE =E= TOT_EXP_2_BE - TOT_IMP_2_BE;
I_TOT_IMP_3_BE.. TOT_IMP_3_BE =E= X3NL_BE + X3DE_BE + X3FR_BE + X3UK_BE + X3IT_BE + X3CN_BE + X3JP_BE + X3US_BE;
I_TOT_EXP_3_BE.. TOT_EXP_3_BE =E= X3BE_NL + X3BE_DE + X3BE_FR + X3BE_UK + X3BE_IT + X3BE_CN + X3BE_JP + X3BE_US;
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I_NET_EXP_3_BE.. NET_EXP_3_BE =E= TOT_EXP_3_BE - TOT_IMP_3_BE;
I_TOT_IMP_5_BE.. TOT_IMP_5_BE =E= X5NL_BE + X5DE_BE + X5FR_BE + X5UK_BE + X5IT_BE + X5CN_BE + X5JP_BE + X5US_BE;
I_TOT_EXP_5_BE.. TOT_EXP_5_BE =E= X5BE_NL + X5BE_DE + X5BE_FR + X5BE_UK + X5BE_IT + X5BE_CN + X5BE_JP + X5BE_US;
I_NET_EXP_5_BE.. NET_EXP_5_BE =E= TOT_EXP_5_BE - TOT_IMP_5_BE;
I_TOT_IMP_6_BE.. TOT_IMP_6_BE =E= X6NL_BE + X6DE_BE + X6FR_BE + X6UK_BE + X6IT_BE + X6CN_BE + X6JP_BE + X6US_BE;
I_TOT_EXP_6_BE.. TOT_EXP_6_BE =E= X6BE_NL + X6BE_DE + X6BE_FR + X6BE_UK + X6BE_IT + X6BE_CN + X6BE_JP + X6BE_US;
I_NET_EXP_6_BE.. NET_EXP_6_BE =E= TOT_EXP_6_BE - TOT_IMP_6_BE;
I_TOT_IMP_7_BE.. TOT_IMP_7_BE =E= X7NL_BE + X7DE_BE + X7FR_BE + X7UK_BE + X7IT_BE + X7CN_BE + X7JP_BE + X7US_BE;
I_TOT_EXP_7_BE.. TOT_EXP_7_BE =E= X7BE_NL + X7BE_DE + X7BE_FR + X7BE_UK + X7BE_IT + X7BE_CN + X7BE_JP + X7BE_US;
I_NET_EXP_7_BE.. NET_EXP_7_BE =E= TOT_EXP_7_BE - TOT_IMP_7_BE;
I_TOT_IMP_8_BE.. TOT_IMP_8_BE =E= X8NL_BE + X8DE_BE + X8FR_BE + X8UK_BE + X8IT_BE + X8CN_BE + X8JP_BE + X8US_BE;
I_TOT_EXP_8_BE.. TOT_EXP_8_BE =E= X8BE_NL + X8BE_DE + X8BE_FR + X8BE_UK + X8BE_IT + X8BE_CN + X8BE_JP + X8BE_US;
I_NET_EXP_8_BE.. NET_EXP_8_BE =E= TOT_EXP_8_BE - TOT_IMP_8_BE;
I_TOT_IMP_9_BE.. TOT_IMP_9_BE =E= X9NL_BE + X9DE_BE + X9FR_BE + X9UK_BE + X9IT_BE + X9CN_BE + X9JP_BE + X9US_BE;
I_TOT_EXP_9_BE.. TOT_EXP_9_BE =E= X9BE_NL + X9BE_DE + X9BE_FR + X9BE_UK + X9BE_IT + X9BE_CN + X9BE_JP + X9BE_US;
I_NET_EXP_9_BE.. NET_EXP_9_BE =E= TOT_EXP_9_BE - TOT_IMP_9_BE;
I_TARIFF_INC_BE.. TARIFF_INC_BE =E= TX0BE * PX0CN * X0CN_BE + TX1BE * PX1CN * X1CN_BE + TX2BE * PX2CN * X2CN_BE + TX3BE * PX3CN * X3CN_BE

                    + TX5BE * PX5CN * X5CN_BE + TX6BE * PX6CN * X6CN_BE + TX7BE * PX7CN * X7CN_BE + TX8BE * PX8CN * X8CN_BE
                    + TX9BE * PX9CN * X9CN_BE
                    + TX0BE * PX0JP * X0JP_BE + TX1BE * PX1JP * X1JP_BE + TX2BE * PX2JP * X2JP_BE + TX3BE * PX3JP * X3JP_BE
                    + TX5BE * PX5JP * X5JP_BE + TX6BE * PX6JP * X6JP_BE + TX7BE * PX7JP * X7JP_BE + TX8BE * PX8JP * X8JP_BE
                    + TX9BE * PX9JP * X9JP_BE
                    + TX0BE * PX0US * X0US_BE + TX1BE * PX1US * X1US_BE + TX2BE * PX2US * X2US_BE + TX3BE * PX3US * X3US_BE
                    + TX5BE * PX5US * X5US_BE + TX6BE * PX6US * X6US_BE + TX7BE * PX7US * X7US_BE + TX8BE * PX8US * X8US_BE
                    + TX9BE * PX9US * X9US_BE;

*   FRANCE

*   ZERO PROFIT CONDITIONS

PRF_X0FR..   PLFR**(alphaL0_FR) * PKFR**(alphaK0_FR) * PX9FR**(alpha90_FR) * PX5FR**(alpha50_FR)
             * PX1FR**(1-alphaL0_FR-alphaK0_FR-alpha90_FR-alpha50_FR) =G= PX0FR;
PRF_X1FR..   PLFR**(alphaL1_FR) * PKFR**(alphaK1_FR) * PX9FR**(alpha91_FR) * PX0FR**(alpha01_FR)
             * PX6FR**(1-alphaL1_FR-alphaK1_FR-alpha91_FR-alpha01_FR) =G= PX1FR;
PRF_X2FR..   PLFR**(alphaL2_FR) * PKFR**(alphaK2_FR) * PX9FR**(alpha92_FR) * PX6FR**(alpha62_FR)
             * PX7FR**(1-alphaL2_FR-alphaK2_FR-alpha92_FR-alpha62_FR) =G= PX2FR;
PRF_X3FR..   PLFR**(alphaL3_FR) * PKFR**(alphaK3_FR) * PX2FR**(alpha23_FR) * PX9FR**(alpha93_FR)
             * PX6FR**(1-alphaL3_FR-alphaK3_FR-alpha23_FR-alpha93_FR) =G= PX3FR;
PRF_X5FR..   PLFR**(alphaL5_FR) * PKFR**(alphaK5_FR) * PX9FR**(alpha95_FR) * PX6FR**(alpha65_FR)
             * PX3FR**(1-alphaL5_FR-alphaK5_FR-alpha95_FR-alpha65_FR) =G= PX5FR;
PRF_X6FR..   PLFR**(alphaL6_FR) * PKFR**(alphaK6_FR) * PX9FR**(alpha96_FR) * PX5FR**(alpha56_FR)
             * PX7FR**(1-alphaL6_FR-alphaK6_FR-alpha96_FR-alpha56_FR) =G= PX6FR;
PRF_X7FR..   PLFR**(alphaL7_FR) * PKFR**(alphaK7_FR) * PX9FR**(alpha97_FR) * PX6FR**(alpha67_FR)
             * PX8FR**(1-alphaL7_FR-alphaK7_FR-alpha97_FR-alpha67_FR) =G= PX7FR;
PRF_X8FR..   PLFR**(alphaL8_FR) * PKFR**(alphaK8_FR) * PX9FR**(alpha98_FR) * PX6FR**(alpha68_FR)
             * PX7FR**(1-alphaL8_FR-alphaK8_FR-alpha98_FR-alpha68_FR) =G= PX8FR;
PRF_X9FR..   PLFR**(alphaL9_FR) * PKFR**(alphaK9_FR) * PX6FR**(alpha69_FR) * PX7FR**(alpha79_FR)
             * PX1FR**(1-alphaL9_FR-alphaK9_FR-alpha69_FR-alpha79_FR) =G= PX9FR;
PRF_WFR..   PX0FR**(phi0FR) * PX1FR**(phi1FR) * PX2FR**(phi2FR) * PX3FR**(phi3FR) * PX5FR**(phi5FR)* PX6FR**(phi6FR)
        * PX7FR**(phi7FR) * PX8FR**(phi8FR) * PX9FR**(1-phi0FR-phi1FR-phi2FR-phi3FR-phi5FR-phi6FR-phi7FR-phi8FR) =G= PWFR;

*   GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0FR..   X0FR + X0DE_FR + X0BE_FR + X0NL_FR + X0UK_FR + X0IT_FR + X0CN_FR + X0JP_FR + X0US_FR =G= WFR * phi0FR * PWFR / PX0FR
             + alpha01_FR * X1FR * PX1FR / PX0FR
             + X0FR_DE
             + X0FR_BE
             + X0FR_NL
             + X0FR_UK
             + X0FR_IT
             + X0FR_CN
             + X0FR_JP

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            + X0FR_US;
MKT_X1FR..    X1FR + X1DE_FR + X1BE_FR + X1NL_FR + X1UK_FR + X1IT_FR + X1CN_FR + X1JP_FR + X1US_FR =G= WFR * phi1FR * PWFR / PX1FR
            + (1-alphaL0_FR-alphaK0_FR-alpha90_FR-alpha50_FR) * X0FR * PX0FR / PX1FR
            + (1-alphaL9_FR-alphaK9_FR-alpha69_FR-alpha79_FR) * X9FR * PX9FR / PX1FR
            + X1FR_DE
            + X1FR_BE
            + X1FR_NL
            + X1FR_UK
            + X1FR_IT
            + X1FR_CN
            + X1FR_JP
            + X1FR_US;
MKT_X2FR..    X2FR + X2DE_FR + X2BE_FR + X2NL_FR + X2UK_FR + X2IT_FR + X2CN_FR + X2JP_FR + X2US_FR =G= WFR * phi2FR * PWFR / PX2FR
            + alpha23_FR * X3FR * PX3FR / PX2FR
            + X2FR_DE
            + X2FR_BE
            + X2FR_NL
            + X2FR_UK
            + X2FR_IT
            + X2FR_CN
            + X2FR_JP
            + X2FR_US;
MKT_X3FR..    X3FR + X3DE_FR + X3BE_FR + X3NL_FR + X3UK_FR + X3IT_FR + X3CN_FR + X3JP_FR + X3US_FR =G= WFR * phi3FR * PWFR / PX3FR
            + (1-alphaL5_FR-alphaK5_FR-alpha95_FR-alpha65_FR) * X5FR * PX5FR / PX3FR
            + X3FR_DE
            + X3FR_BE
            + X3FR_NL
            + X3FR_UK
            + X3FR_IT
            + X3FR_CN
            + X3FR_JP
            + X3FR_US;
MKT_X5FR..    X5FR + X5DE_FR + X5BE_FR + X5NL_FR + X5UK_FR + X5IT_FR + X5CN_FR + X5JP_FR + X5US_FR =G= WFR * phi5FR * PWFR / PX5FR
            + alpha50_FR * X0FR * PX0FR / PX5FR
            + alpha56_FR * X6FR * PX6FR / PX5FR
            + X5FR_DE
            + X5FR_BE
            + X5FR_NL
            + X5FR_UK
            + X5FR_IT
            + X5FR_CN
            + X5FR_JP
            + X5FR_US;
MKT_X6FR..    X6FR + X6DE_FR + X6BE_FR + X6NL_FR + X6UK_FR + X6IT_FR + X6CN_FR + X6JP_FR + X6US_FR =G= WFR * phi6FR * PWFR / PX6FR
            + (1-alphaL1_FR-alphaK1_FR-alpha91_FR-alpha01_FR) * X1FR * PX1FR / PX6FR
            + alpha62_FR * X2FR * PX2FR / PX6FR
            + (1-alphaL3_FR-alphaK3_FR-alpha23_FR-alpha93_FR) * X3FR * PX3FR / PX6FR
            + alpha65_FR * X5FR * PX5FR / PX6FR
            + alpha67_FR * X7FR * PX7FR / PX6FR
            + alpha68_FR * X8FR * PX8FR / PX6FR
            + alpha69_FR * X9FR * PX9FR / PX6FR
            + X6FR_DE
            + X6FR_BE
            + X6FR_NL
            + X6FR_UK
            + X6FR_IT
            + X6FR_CN
            + X6FR_JP
            + X6FR_US;
MKT_X7FR..    X7FR + X7DE_FR + X7BE_FR + X7NL_FR + X7UK_FR + X7IT_FR + X7CN_FR + X7JP_FR + X7US_FR =G= WFR * phi7FR * PWFR / PX7FR
            + (1-alphaL2_FR-alphaK2_FR-alpha92_FR-alpha62_FR) * X2FR * PX2FR / PX7FR
            + (1-alphaL6_FR-alphaK6_FR-alpha96_FR-alpha56_FR) * X6FR * PX6FR / PX7FR
            + (1-alphaL8_FR-alphaK8_FR-alpha98_FR-alpha68_FR) * X8FR * PX8FR / PX7FR
```

+ alpha79_FR * X9FR * PX9FR / PX7FR
                    + X7FR_DE
                    + X7FR_BE
                    + X7FR_NL
                    + X7FR_UK
                    + X7FR_IT
                    + X7FR_CN
                    + X7FR_JP
                    + X7FR_US;
MKT_X8FR..   X8FR + X8DE_FR + X8BE_FR + X8NL_FR + X8UK_FR + X8IT_FR + X8CN_FR + X8JP_FR + X8US_FR =G= WFR * phi8FR * PWFR / PX8FR
                    + (1-alphaL7_FR-alphaK7_FR-alpha97_FR-alpha67_FR) * X7FR * PX7FR / PX8FR
                    + X8FR_DE
                    + X8FR_BE
                    + X8FR_NL
                    + X8FR_UK
                    + X8FR_IT
                    + X8FR_CN
                    + X8FR_JP
                    + X8FR_US;
MKT_X9FR..   X9FR + X9DE_FR + X9BE_FR + X9NL_FR + X9UK_FR + X9IT_FR + X9CN_FR + X9JP_FR + X9US_FR =G= WFR * (1-phi0FR-phi1FR-phi2FR-
phi3FR-phi5FR-phi6FR-phi7FR-phi8FR) * PWFR / PX9FR
                    + alpha90_FR * X0FR * PX0FR / PX9FR
                    + alpha91_FR * X1FR * PX1FR / PX9FR
                    + alpha92_FR * X2FR * PX2FR / PX9FR
                    + alpha93_FR * X3FR * PX3FR / PX9FR
                    + alpha95_FR * X5FR * PX5FR / PX9FR
                    + alpha96_FR * X6FR * PX6FR / PX9FR
                    + alpha97_FR * X7FR * PX7FR / PX9FR
                    + alpha98_FR * X8FR * PX8FR / PX9FR
                    + X9FR_DE
                    + X9FR_BE
                    + X9FR_NL
                    + X9FR_UK
                    + X9FR_IT
                    + X9FR_CN
                    + X9FR_JP
                    + X9FR_US;
MKT_WFR..   WFR * PWFR =E= CONSFR / 1;

*   FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LFR..   LFR =G= alphaL0_FR * X0FR * PX0FR / PLFR
                    + alphaL1_FR * X1FR * PX1FR / PLFR
                    + alphaL2_FR * X2FR * PX2FR / PLFR
                    + alphaL3_FR * X3FR * PX3FR / PLFR
                    + alphaL5_FR * X5FR * PX5FR / PLFR
                    + alphaL6_FR * X6FR * PX6FR / PLFR
                    + alphaL7_FR * X7FR * PX7FR / PLFR
                    + alphaL8_FR * X8FR * PX8FR / PLFR
                    + alphaL9_FR * X9FR * PX9FR / PLFR;
MKT_KFR..   KFR =G= (alphaK0_FR) * X0FR * PX0FR / PKFR
                    + (alphaK1_FR) * X1FR * PX1FR / PKFR
                    + (alphaK2_FR) * X2FR * PX2FR / PKFR
                    + (alphaK3_FR) * X3FR * PX3FR / PKFR
                    + (alphaK5_FR) * X5FR * PX5FR / PKFR
                    + (alphaK6_FR) * X6FR * PX6FR / PKFR
                    + (alphaK7_FR) * X7FR * PX7FR / PKFR
                    + (alphaK8_FR) * X8FR * PX8FR / PKFR
                    + (alphaK9_FR) * X9FR * PX9FR / PKFR;

*   DEFINITION OF INCOME

I_CONSFR..   CONSFR =E= LFR*PLFR + KFR*PKFR

$$+ TX0FR * PX0CN * X0CN\_FR + TX1FR * PX1CN * X1CN\_FR + TX2FR * PX2CN * X2CN\_FR + TX3FR * PX3CN * X3CN\_FR$$
$$+ TX5FR * PX5CN * X5CN\_FR + TX6FR * PX6CN * X6CN\_FR + TX7FR * PX7CN * X7CN\_FR + TX8FR * PX8CN * X8CN\_FR$$
$$+ TX9FR * PX9CN * X9CN\_FR$$
$$+ TX0FR * PX0JP * X0JP\_FR + TX1FR * PX1JP * X1JP\_FR + TX2FR * PX2JP * X2JP\_FR + TX3FR * PX3JP * X3JP\_FR$$
$$+ TX5FR * PX5JP * X5JP\_FR + TX6FR * PX6JP * X6JP\_FR + TX7FR * PX7JP * X7JP\_FR + TX8FR * PX8JP * X8JP\_FR$$
$$+ TX9FR * PX9JP * X9JP\_FR$$
$$+ TX0FR * PX0US * X0US\_FR + TX1FR * PX1US * X1US\_FR + TX2FR * PX2US * X2US\_FR + TX3FR * PX3US * X3US\_FR$$
$$+ TX5FR * PX5US * X5US\_FR + TX6FR * PX6US * X6US\_FR + TX7FR * PX7US * X7US\_FR + TX8FR * PX8US * X8US\_FR$$
$$+ TX9FR * PX9US * X9US\_FR;$$

*   ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_FR.. TOT_IMP_0_FR =E= X0NL_FR + X0DE_FR + X0BE_FR + X0UK_FR + X0IT_FR + X0CN_FR + X0JP_FR + X0US_FR;
I_TOT_EXP_0_FR.. TOT_EXP_0_FR =E= X0FR_NL + X0FR_DE + X0FR_BE + X0FR_UK + X0FR_IT + X0FR_CN + X0FR_JP + X0FR_US;
I_NET_EXP_0_FR.. NET_EXP_0_FR =E= TOT_EXP_0_FR - TOT_IMP_0_FR;
I_TOT_IMP_1_FR.. TOT_IMP_1_FR =E= X1NL_FR + X1DE_FR + X1BE_FR + X1UK_FR + X1IT_FR + X1CN_FR + X1JP_FR + X1US_FR;
I_TOT_EXP_1_FR.. TOT_EXP_1_FR =E= X1FR_NL + X1FR_DE + X1FR_BE + X1FR_UK + X1FR_IT + X1FR_CN + X1FR_JP + X1FR_US;
I_NET_EXP_1_FR.. NET_EXP_1_FR =E= TOT_EXP_1_FR - TOT_IMP_1_FR;
I_TOT_IMP_2_FR.. TOT_IMP_2_FR =E= X2NL_FR + X2DE_FR + X2BE_FR + X2UK_FR + X2IT_FR + X2CN_FR + X2JP_FR + X2US_FR;
I_TOT_EXP_2_FR.. TOT_EXP_2_FR =E= X2FR_NL + X2FR_DE + X2FR_BE + X2FR_UK + X2FR_IT + X2FR_CN + X2FR_JP + X2FR_US;
I_NET_EXP_2_FR.. NET_EXP_2_FR =E= TOT_EXP_2_FR - TOT_IMP_2_FR;
I_TOT_IMP_3_FR.. TOT_IMP_3_FR =E= X3NL_FR + X3DE_FR + X3BE_FR + X3UK_FR + X3IT_FR + X3CN_FR + X3JP_FR + X3US_FR;
I_TOT_EXP_3_FR.. TOT_EXP_3_FR =E= X3FR_NL + X3FR_DE + X3FR_BE + X3FR_UK + X3FR_IT + X3FR_CN + X3FR_JP + X3FR_US;
I_NET_EXP_3_FR.. NET_EXP_3_FR =E= TOT_EXP_3_FR - TOT_IMP_3_FR;
I_TOT_IMP_5_FR.. TOT_IMP_5_FR =E= X5NL_FR + X5DE_FR + X5BE_FR + X5UK_FR + X5IT_FR + X5CN_FR + X5JP_FR + X5US_FR;
I_TOT_EXP_5_FR.. TOT_EXP_5_FR =E= X5FR_NL + X5FR_DE + X5FR_BE + X5FR_UK + X5FR_IT + X5FR_CN + X5FR_JP + X5FR_US;
I_NET_EXP_5_FR.. NET_EXP_5_FR =E= TOT_EXP_5_FR - TOT_IMP_5_FR;
I_TOT_IMP_6_FR.. TOT_IMP_6_FR =E= X6NL_FR + X6DE_FR + X6BE_FR + X6UK_FR + X6IT_FR + X6CN_FR + X6JP_FR + X6US_FR;
I_TOT_EXP_6_FR.. TOT_EXP_6_FR =E= X6FR_NL + X6FR_DE + X6FR_BE + X6FR_UK + X6FR_IT + X6FR_CN + X6FR_JP + X6FR_US;
I_NET_EXP_6_FR.. NET_EXP_6_FR =E= TOT_EXP_6_FR - TOT_IMP_6_FR;
I_TOT_IMP_7_FR.. TOT_IMP_7_FR =E= X7NL_FR + X7DE_FR + X7BE_FR + X7UK_FR + X7IT_FR + X7CN_FR + X7JP_FR + X7US_FR;
I_TOT_EXP_7_FR.. TOT_EXP_7_FR =E= X7FR_NL + X7FR_DE + X7FR_BE + X7FR_UK + X7FR_IT + X7FR_CN + X7FR_JP + X7FR_US;
I_NET_EXP_7_FR.. NET_EXP_7_FR =E= TOT_EXP_7_FR - TOT_IMP_7_FR;
I_TOT_IMP_8_FR.. TOT_IMP_8_FR =E= X8NL_FR + X8DE_FR + X8BE_FR + X8UK_FR + X8IT_FR + X8CN_FR + X8JP_FR + X8US_FR;
I_TOT_EXP_8_FR.. TOT_EXP_8_FR =E= X8FR_NL + X8FR_DE + X8FR_BE + X8FR_UK + X8FR_IT + X8FR_CN + X8FR_JP + X8FR_US;
I_NET_EXP_8_FR.. NET_EXP_8_FR =E= TOT_EXP_8_FR - TOT_IMP_8_FR;
I_TOT_IMP_9_FR.. TOT_IMP_9_FR =E= X9NL_FR + X9DE_FR + X9BE_FR + X9UK_FR + X9IT_FR + X9CN_FR + X9JP_FR + X9US_FR;
I_TOT_EXP_9_FR.. TOT_EXP_9_FR =E= X9FR_NL + X9FR_DE + X9FR_BE + X9FR_UK + X9FR_IT + X9FR_CN + X9FR_JP + X9FR_US;
I_NET_EXP_9_FR.. NET_EXP_9_FR =E= TOT_EXP_9_FR - TOT_IMP_9_FR;
I_TARIFF_INC_FR.. TARIFF_INC_FR =E= TX0FR * PX0CN * X0CN_FR + TX1FR * PX1CN * X1CN_FR + TX2FR * PX2CN * X2CN_FR + TX3FR * PX3CN * X3CN_FR

$$+ TX5FR * PX5CN * X5CN\_FR + TX6FR * PX6CN * X6CN\_FR + TX7FR * PX7CN * X7CN\_FR + TX8FR * PX8CN * X8CN\_FR$$
$$+ TX9FR * PX9CN * X9CN\_FR$$
$$+ TX0FR * PX0JP * X0JP\_FR + TX1FR * PX1JP * X1JP\_FR + TX2FR * PX2JP * X2JP\_FR + TX3FR * PX3JP * X3JP\_FR$$
$$+ TX5FR * PX5JP * X5JP\_FR + TX6FR * PX6JP * X6JP\_FR + TX7FR * PX7JP * X7JP\_FR + TX8FR * PX8JP * X8JP\_FR$$
$$+ TX9FR * PX9JP * X9JP\_FR$$
$$+ TX0FR * PX0US * X0US\_FR + TX1FR * PX1US * X1US\_FR + TX2FR * PX2US * X2US\_FR + TX3FR * PX3US * X3US\_FR$$
$$+ TX5FR * PX5US * X5US\_FR + TX6FR * PX6US * X6US\_FR + TX7FR * PX7US * X7US\_FR + TX8FR * PX8US * X8US\_FR$$
$$+ TX9FR * PX9US * X9US\_FR;$$

*   THE UNITED KINGDOM

*   ZERO PROFIT CONDITIONS

PRF_X0UK..   PLUK**(alphaL0_UK) * PKUK**(alphaK0_UK) * PX9UK**(alpha90_UK) * PX1UK**(alpha10_UK)
          * PX6UK**(1-alphaL0_UK-alphaK0_UK-alpha90_UK-alpha10_UK) =G= PX0UK;
PRF_X1UK..   PLUK**(alphaL1_UK) * PKUK**(alphaK1_UK) * PX9UK**(alpha91_UK) * PX0UK**(alpha01_UK)
          * PX6UK**(1-alphaL1_UK-alphaK1_UK-alpha91_UK-alpha01_UK) =G= PX1UK;
PRF_X2UK..   PLUK**(alphaL2_UK) * PKUK**(alphaK2_UK) * PX9UK**(alpha92_UK) * PX6UK**(alpha62_UK)
          * PX7UK**(1-alphaL2_UK-alphaK2_UK-alpha92_UK-alpha62_UK) =G= PX2UK;
PRF_X3UK..   PLUK**(alphaL3_UK) * PKUK**(alphaK3_UK) * PX2UK**(alpha23_UK) * PX9UK**(alpha93_UK)
          * PX6UK**(1-alphaL3_UK-alphaK3_UK-alpha23_UK-alpha93_UK) =G= PX3UK;
PRF_X5UK..   PLUK**(alphaL5_UK) * PKUK**(alphaK5_UK) * PX9UK**(alpha95_UK) * PX6UK**(alpha65_UK)

```
                   * PX3UK**(1-alphaL5_UK-alphaK5_UK-alpha95_UK-alpha65_UK) =G= PX5UK;
PRF_X6UK..    PLUK**(alphaL6_UK) * PKUK**(alphaK6_UK) * PX9UK**(alpha96_UK) * PX5UK**(alpha56_UK)
                   * PX7UK**(1-alphaL6_UK-alphaK6_UK-alpha96_UK-alpha56_UK) =G= PX6UK;
PRF_X7UK..    PLUK**(alphaL7_UK) * PKUK**(alphaK7_UK) * PX9UK**(alpha97_UK) * PX6UK**(alpha67_UK)
                   * PX8UK**(1-alphaL7_UK-alphaK7_UK-alpha97_UK-alpha67_UK) =G= PX7UK;
PRF_X8UK..    PLUK**(alphaL8_UK) * PKUK**(alphaK8_UK) * PX9UK**(alpha98_UK) * PX6UK**(alpha68_UK)
                   * PX7UK**(1-alphaL8_UK-alphaK8_UK-alpha98_UK-alpha68_UK) =G= PX8UK;
PRF_X9UK..    PLUK**(alphaL9_UK) * PKUK**(alphaK9_UK) * PX6UK**(alpha69_UK) * PX8UK**(alpha89_UK)
                   * PX2UK**(1-alphaL9_UK-alphaK9_UK-alpha69_UK-alpha89_UK) =G= PX9UK;
PRF_WUK..    PX0UK**(phi0UK) * PX1UK**(phi1UK) * PX2UK**(phi2UK) * PX3UK**(phi3UK) * PX5UK**(phi5UK)* PX6UK**(phi6UK)
          * PX7UK**(phi7UK) * PX8UK**(phi8UK) * PX9UK**(1-phi0UK-phi1UK-phi2UK-phi3UK-phi5UK-phi6UK-phi7UK-phi8UK) =G= PWUK;


*              GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0UK..    X0UK + X0DE_UK + X0BE_UK + X0NL_UK + X0FR_UK + X0IT_UK + X0CN_UK + X0JP_UK + X0US_UK =G= WUK * phi0UK * PWUK /
PX0UK
                   + alpha01_UK * X1UK * PX1UK / PX0UK
                   + X0UK_DE
                   + X0UK_BE
                   + X0UK_NL
                   + X0UK_FR
                   + X0UK_IT
                   + X0UK_CN
                   + X0UK_JP
                   + X0UK_US;
MKT_X1UK..    X1UK + X1DE_UK + X1BE_UK + X1NL_UK + X1FR_UK + X1IT_UK + X1CN_UK + X1JP_UK + X1US_UK =G= WUK * phi1UK * PWUK /
PX1UK
                   + alpha10_UK * X0UK * PX0UK / PX1UK
                   + X1UK_DE
                   + X1UK_BE
                   + X1UK_NL
                   + X1UK_FR
                   + X1UK_IT
                   + X1UK_CN
                   + X1UK_JP
                   + X1UK_US;
MKT_X2UK..    X2UK + X2DE_UK + X2BE_UK + X2NL_UK + X2FR_UK + X2IT_UK + X2CN_UK + X2JP_UK + X2US_UK =G= WUK * phi2UK * PWUK /
PX2UK
                   + alpha23_UK * X3UK * PX3UK / PX2UK
                   + (1-alphaL9_UK-alphaK9_UK-alpha69_UK-alpha89_UK) * X9UK * PX9UK / PX2UK
                   + X2UK_DE
                   + X2UK_BE
                   + X2UK_NL
                   + X2UK_FR
                   + X2UK_IT
                   + X2UK_CN
                   + X2UK_JP
                   + X2UK_US;
MKT_X3UK..    X3UK + X3DE_UK + X3BE_UK + X3NL_UK + X3FR_UK + X3IT_UK + X3CN_UK + X3JP_UK + X3US_UK =G= WUK * phi3UK * PWUK /
PX3UK
                   + (1-alphaL5_UK-alphaK5_UK-alpha95_UK-alpha65_UK) * X5UK * PX5UK / PX3UK
                   + X3UK_DE
                   + X3UK_BE
                   + X3UK_NL
                   + X3UK_FR
                   + X3UK_IT
                   + X3UK_CN
                   + X3UK_JP
                   + X3UK_US;
MKT_X5UK..    X5UK + X5DE_UK + X5BE_UK + X5NL_UK + X5FR_UK + X5IT_UK + X5CN_UK + X5JP_UK + X5US_UK =G= WUK * phi5UK * PWUK /
PX5UK
                   + alpha56_UK * X6UK * PX6UK / PX5UK
                   + X5UK_DE
```

```
                         + X5UK_BE
                         + X5UK_NL
                         + X5UK_FR
                         + X5UK_IT
                         + X5UK_CN
                         + X5UK_JP
                         + X5UK_US;
MKT_X6UK..   X6UK + X6DE_UK + X6BE_UK + X6NL_UK + X6FR_UK + X6IT_UK + X6CN_UK + X6JP_UK + X6US_UK =G= WUK * phi6UK * PWUK /
PX6UK
                         + (1-alphaL0_UK-alphaK0_UK-alpha90_UK-alpha10_UK) * X0UK * PX0UK / PX6UK
                         + (1-alphaL1_UK-alphaK1_UK-alpha91_UK-alpha01_UK) * X1UK * PX1UK / PX6UK
                         + alpha62_UK * X2UK * PX2UK / PX6UK
                         + (1-alphaL3_UK-alphaK3_UK-alpha23_UK-alpha93_UK) * X3UK * PX3UK / PX6UK
                         + alpha65_UK * X5UK * PX5UK / PX6UK
                         + alpha67_UK * X7UK * PX7UK / PX6UK
                         + alpha68_UK * X8UK * PX8UK / PX6UK
                         + alpha69_UK * X9UK * PX9UK / PX6UK
                         + X6UK_DE
                         + X6UK_BE
                         + X6UK_NL
                         + X6UK_FR
                         + X6UK_IT
                         + X6UK_CN
                         + X6UK_JP
                         + X6UK_US;
MKT_X7UK..   X7UK + X7DE_UK + X7BE_UK + X7NL_UK + X7FR_UK + X7IT_UK + X7CN_UK + X7JP_UK + X7US_UK =G= WUK * phi7UK * PWUK /
PX7UK
                         + (1-alphaL2_UK-alphaK2_UK-alpha92_UK-alpha62_UK) * X2UK * PX2UK / PX7UK
                         + (1-alphaL6_UK-alphaK6_UK-alpha96_UK-alpha56_UK) * X6UK * PX6UK / PX7UK
                         + (1-alphaL8_UK-alphaK8_UK-alpha98_UK-alpha68_UK) * X8UK * PX8UK / PX7UK
                         + X7UK_DE
                         + X7UK_BE
                         + X7UK_NL
                         + X7UK_FR
                         + X7UK_IT
                         + X7UK_CN
                         + X7UK_JP
                         + X7UK_US;
MKT_X8UK..   X8UK + X8DE_UK + X8BE_UK + X8NL_UK + X8FR_UK + X8IT_UK + X8CN_UK + X8JP_UK + X8US_UK =G= WUK * phi8UK * PWUK /
PX8UK
                         + (1-alphaL7_UK-alphaK7_UK-alpha97_UK-alpha67_UK) * X7UK * PX7UK / PX8UK
                         + alpha89_UK * X9UK * PX9UK / PX8UK
                         + X8UK_DE
                         + X8UK_BE
                         + X8UK_NL
                         + X8UK_FR
                         + X8UK_IT
                         + X8UK_CN
                         + X8UK_JP
                         + X8UK_US;
MKT_X9UK..   X9UK + X9DE_UK + X9BE_UK + X9NL_UK + X9FR_UK + X9IT_UK + X9CN_UK + X9JP_UK + X9US_UK =G= WUK * (1-phi0UK-phi1UK-
phi2UK-phi3UK-phi5UK-phi6UK-phi7UK-phi8UK) * PWUK / PX9UK
                         + alpha90_UK * X0UK * PX0UK / PX9UK
                         + alpha91_UK * X1UK * PX1UK / PX9UK
                         + alpha92_UK * X2UK * PX2UK / PX9UK
                         + alpha93_UK * X3UK * PX3UK / PX9UK
                         + alpha95_UK * X5UK * PX5UK / PX9UK
                         + alpha96_UK * X6UK * PX6UK / PX9UK
                         + alpha97_UK * X7UK * PX7UK / PX9UK
                         + alpha98_UK * X8UK * PX8UK / PX9UK
                         + X9UK_DE
                         + X9UK_BE
                         + X9UK_NL
```

```
                + X9UK_FR
                + X9UK_IT
                + X9UK_CN
                + X9UK_JP
                + X9UK_US;
MKT_WUK..    WUK * PWUK =E= CONSUK / 1;


*              FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LUK..     LUK =G=  alphaL0_UK * X0UK * PX0UK / PLUK + alphaL1_UK * X1UK * PX1UK / PLUK + alphaL2_UK * X2UK * PX2UK / PLUK +
alphaL3_UK * X3UK * PX3UK / PLUK
              + alphaL5_UK * X5UK * PX5UK / PLUK + alphaL6_UK * X6UK * PX6UK / PLUK + alphaL7_UK * X7UK * PX7UK / PLUK + alphaL8_UK *
X8UK * PX8UK / PLUK
              + alphaL9_UK * X9UK * PX9UK / PLUK;
MKT_KUK..     KUK =G=  (alphaK0_UK) * X0UK * PX0UK / PKUK + (alphaK1_UK) * X1UK * PX1UK / PKUK + (alphaK2_UK) * X2UK * PX2UK / PKUK
              + (alphaK3_UK) * X3UK * PX3UK / PKUK + (alphaK5_UK) * X5UK * PX5UK / PKUK + (alphaK6_UK) * X6UK * PX6UK / PKUK
              + (alphaK7_UK) * X7UK * PX7UK / PKUK + (alphaK8_UK) * X8UK * PX8UK / PKUK + (alphaK9_UK) * X9UK * PX9UK / PKUK;


*              DEFINITION OF INCOME

I_CONSUK..    CONSUK =E= LUK*PLUK + KUK*PKUK
              + TX0UK * PX0CN * X0CN_UK + TX1UK * PX1CN * X1CN_UK + TX2UK * PX2CN * X2CN_UK + TX3UK * PX3CN * X3CN_UK
              + TX5UK * PX5CN * X5CN_UK + TX6UK * PX6CN * X6CN_UK + TX7UK * PX7CN * X7CN_UK + TX8UK * PX8CN * X8CN_UK
              + TX9UK * PX9CN * X9CN_UK
              + TX0UK * PX0JP * X0JP_UK + TX1UK * PX1JP * X1JP_UK + TX2UK * PX2JP * X2JP_UK + TX3UK * PX3JP * X3JP_UK
              + TX5UK * PX5JP * X5JP_UK + TX6UK * PX6JP * X6JP_UK + TX7UK * PX7JP * X7JP_UK + TX8UK * PX8JP * X8JP_UK
              + TX9UK * PX9JP * X9JP_UK
              + TX0UK * PX0US * X0US_UK + TX1UK * PX1US * X1US_UK + TX2UK * PX2US * X2US_UK + TX3UK * PX3US * X3US_UK
              + TX5UK * PX5US * X5US_UK + TX6UK * PX6US * X6US_UK + TX7UK * PX7US * X7US_UK + TX8UK * PX8US * X8US_UK
              + TX9UK * PX9US * X9US_UK;


*              ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_UK.. TOT_IMP_0_UK =E= X0NL_UK + X0DE_UK + X0BE_UK + X0FR_UK + X0IT_UK + X0CN_UK + X0JP_UK + X0US_UK;
I_TOT_EXP_0_UK.. TOT_EXP_0_UK =E= X0UK_NL + X0UK_DE + X0UK_BE + X0UK_FR + X0UK_IT + X0UK_CN + X0UK_JP + X0UK_US;
I_NET_EXP_0_UK.. NET_EXP_0_UK =E= TOT_EXP_0_UK - TOT_IMP_0_UK;
I_TOT_IMP_1_UK.. TOT_IMP_1_UK =E= X1NL_UK + X1DE_UK + X1BE_UK + X1FR_UK + X1IT_UK + X1CN_UK + X1JP_UK + X1US_UK;
I_TOT_EXP_1_UK.. TOT_EXP_1_UK =E= X1UK_NL + X1UK_DE + X1UK_BE + X1UK_FR + X1UK_IT + X1UK_CN + X1UK_JP + X1UK_US;
I_NET_EXP_1_UK.. NET_EXP_1_UK =E= TOT_EXP_1_UK - TOT_IMP_1_UK;
I_TOT_IMP_2_UK.. TOT_IMP_2_UK =E= X2NL_UK + X2DE_UK + X2BE_UK + X2FR_UK + X2IT_UK + X2CN_UK + X2JP_UK + X2US_UK;
I_TOT_EXP_2_UK.. TOT_EXP_2_UK =E= X2UK_NL + X2UK_DE + X2UK_BE + X2UK_FR + X2UK_IT + X2UK_CN + X2UK_JP + X2UK_US;
I_NET_EXP_2_UK.. NET_EXP_2_UK =E= TOT_EXP_2_UK - TOT_IMP_2_UK;
I_TOT_IMP_3_UK.. TOT_IMP_3_UK =E= X3NL_UK + X3DE_UK + X3BE_UK + X3FR_UK + X3IT_UK + X3CN_UK + X3JP_UK + X3US_UK;
I_TOT_EXP_3_UK.. TOT_EXP_3_UK =E= X3UK_NL + X3UK_DE + X3UK_BE + X3UK_FR + X3UK_IT + X3UK_CN + X3UK_JP + X3UK_US;
I_NET_EXP_3_UK.. NET_EXP_3_UK =E= TOT_EXP_3_UK - TOT_IMP_3_UK;
I_TOT_IMP_5_UK.. TOT_IMP_5_UK =E= X5NL_UK + X5DE_UK + X5BE_UK + X5FR_UK + X5IT_UK + X5CN_UK + X5JP_UK + X5US_UK;
I_TOT_EXP_5_UK.. TOT_EXP_5_UK =E= X5UK_NL + X5UK_DE + X5UK_BE + X5UK_FR + X5UK_IT + X5UK_CN + X5UK_JP + X5UK_US;
I_NET_EXP_5_UK.. NET_EXP_5_UK =E= TOT_EXP_5_UK - TOT_IMP_5_UK;
I_TOT_IMP_6_UK.. TOT_IMP_6_UK =E= X6NL_UK + X6DE_UK + X6BE_UK + X6FR_UK + X6IT_UK + X6CN_UK + X6JP_UK + X6US_UK;
I_TOT_EXP_6_UK.. TOT_EXP_6_UK =E= X6UK_NL + X6UK_DE + X6UK_BE + X6UK_FR + X6UK_IT + X6UK_CN + X6UK_JP + X6UK_US;
I_NET_EXP_6_UK.. NET_EXP_6_UK =E= TOT_EXP_6_UK - TOT_IMP_6_UK;
I_TOT_IMP_7_UK.. TOT_IMP_7_UK =E= X7NL_UK + X7DE_UK + X7BE_UK + X7FR_UK + X7IT_UK + X7CN_UK + X7JP_UK + X7US_UK;
I_TOT_EXP_7_UK.. TOT_EXP_7_UK =E= X7UK_NL + X7UK_DE + X7UK_BE + X7UK_FR + X7UK_IT + X7UK_CN + X7UK_JP + X7UK_US;
I_NET_EXP_7_UK.. NET_EXP_7_UK =E= TOT_EXP_7_UK - TOT_IMP_7_UK;
I_TOT_IMP_8_UK.. TOT_IMP_8_UK =E= X8NL_UK + X8DE_UK + X8BE_UK + X8FR_UK + X8IT_UK + X8CN_UK + X8JP_UK + X8US_UK;
I_TOT_EXP_8_UK.. TOT_EXP_8_UK =E= X8UK_NL + X8UK_DE + X8UK_BE + X8UK_FR + X8UK_IT + X8UK_CN + X8UK_JP + X8UK_US;
I_NET_EXP_8_UK.. NET_EXP_8_UK =E= TOT_EXP_8_UK - TOT_IMP_8_UK;
I_TOT_IMP_9_UK.. TOT_IMP_9_UK =E= X9NL_UK + X9DE_UK + X9BE_UK + X9FR_UK + X9IT_UK + X9CN_UK + X9JP_UK + X9US_UK;
I_TOT_EXP_9_UK.. TOT_EXP_9_UK =E= X9UK_NL + X9UK_DE + X9UK_BE + X9UK_FR + X9UK_IT + X9UK_CN + X9UK_JP + X9UK_US;
I_NET_EXP_9_UK.. NET_EXP_9_UK =E= TOT_EXP_9_UK - TOT_IMP_9_UK;
I_TARIFF_INC_UK.. TARIFF_INC_UK =E= TX0UK * PX0CN * X0CN_UK + TX1UK * PX1CN * X1CN_UK + TX2UK * PX2CN * X2CN_UK + TX3UK * PX3CN *
X3CN_UK
              + TX5UK * PX5CN * X5CN_UK + TX6UK * PX6CN * X6CN_UK + TX7UK * PX7CN * X7CN_UK + TX8UK * PX8CN * X8CN_UK
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             + TX9UK * PX9CN * X9CN_UK
             + TX0UK * PX0JP * X0JP_UK + TX1UK * PX1JP * X1JP_UK + TX2UK * PX2JP * X2JP_UK + TX3UK * PX3JP * X3JP_UK
             + TX5UK * PX5JP * X5JP_UK + TX6UK * PX6JP * X6JP_UK + TX7UK * PX7JP * X7JP_UK + TX8UK * PX8JP * X8JP_UK
             + TX9UK * PX9JP * X9JP_UK
             + TX0UK * PX0US * X0US_UK + TX1UK * PX1US * X1US_UK + TX2UK * PX2US * X2US_UK + TX3UK * PX3US * X3US_UK
             + TX5UK * PX5US * X5US_UK + TX6UK * PX6US * X6US_UK + TX7UK * PX7US * X7US_UK + TX8UK * PX8US * X8US_UK
             + TX9UK * PX9US * X9US_UK;


*        ITALY

*              ZERO PROFIT CONDITIONS

PRF_X0IT..   PLIT**(alphaL0_IT) * PKIT**(alphaK0_IT) * PX9IT**(alpha90_IT) * PX5IT**(alpha50_IT)
               * PX1IT**(1-alphaL0_IT-alphaK0_IT-alpha90_IT-alpha50_IT) =G= PX0IT;
PRF_X1IT..   PLIT**(alphaL1_IT) * PKIT**(alphaK1_IT) * PX9IT**(alpha91_IT) * PX0IT**(alpha01_IT)
               * PX6IT**(1-alphaL1_IT-alphaK1_IT-alpha91_IT-alpha01_IT) =G= PX1IT;
PRF_X2IT..   PLIT**(alphaL2_IT) * PKIT**(alphaK2_IT) * PX9IT**(alpha92_IT) * PX6IT**(alpha62_IT)
               * PX5IT**(1-alphaL2_IT-alphaK2_IT-alpha92_IT-alpha62_IT) =G= PX2IT;
PRF_X3IT..   PLIT**(alphaL3_IT) * PKIT**(alphaK3_IT) * PX2IT**(alpha23_IT) * PX9IT**(alpha93_IT)
               * PX6IT**(1-alphaL3_IT-alphaK3_IT-alpha23_IT-alpha93_IT) =G= PX3IT;
PRF_X5IT..   PLIT**(alphaL5_IT) * PKIT**(alphaK5_IT) * PX9IT**(alpha95_IT) * PX6IT**(alpha65_IT)
               * PX1IT**(1-alphaL5_IT-alphaK5_IT-alpha95_IT-alpha65_IT) =G= PX5IT;
PRF_X6IT..   PLIT**(alphaL6_IT) * PKIT**(alphaK6_IT) * PX9IT**(alpha96_IT) * PX5IT**(alpha56_IT)
               * PX7IT**(1-alphaL6_IT-alphaK6_IT-alpha96_IT-alpha56_IT) =G= PX6IT;
PRF_X7IT..   PLIT**(alphaL7_IT) * PKIT**(alphaK7_IT) * PX9IT**(alpha97_IT) * PX6IT**(alpha67_IT)
               * PX8IT**(1-alphaL7_IT-alphaK7_IT-alpha97_IT-alpha67_IT) =G= PX7IT;
PRF_X8IT..   PLIT**(alphaL8_IT) * PKIT**(alphaK8_IT) * PX9IT**(alpha98_IT) * PX6IT**(alpha68_IT)
               * PX7IT**(1-alphaL8_IT-alphaK8_IT-alpha98_IT-alpha68_IT) =G= PX8IT;
PRF_X9IT..   PLIT**(alphaL9_IT) * PKIT**(alphaK9_IT) * PX6IT**(alpha69_IT) * PX8IT**(alpha89_IT)
               * PX7IT**(1-alphaL9_IT-alphaK9_IT-alpha69_IT-alpha89_IT) =G= PX9IT;
PRF_WIT..    PX0IT**(phi0IT) * PX1IT**(phi1IT) * PX2IT**(phi2IT) * PX3IT**(phi3IT) * PX5IT**(phi5IT)* PX6IT**(phi6IT)
         * PX7IT**(phi7IT) * PX8IT**(phi8IT) * PX9IT**(1-phi0IT-phi1IT-phi2IT-phi3IT-phi5IT-phi6IT-phi7IT-phi8IT) =G= PWIT;


*              GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0IT..   X0IT + X0DE_IT + X0BE_IT + X0NL_IT + X0FR_IT + X0UK_IT + X0CN_IT + X0JP_IT + X0US_IT =G= WIT * phi0IT * PWIT / PX0IT
             + alpha01_IT * X1IT * PX1IT / PX0IT
             + X0IT_DE
             + X0IT_BE
             + X0IT_NL
             + X0IT_FR
             + X0IT_UK
             + X0IT_CN
             + X0IT_JP
             + X0IT_US;
MKT_X1IT..   X1IT + X1DE_IT + X1BE_IT + X1NL_IT + X1FR_IT + X1UK_IT + X1CN_IT + X1JP_IT + X1US_IT =G= WIT * phi1IT * PWIT / PX1IT
             + (1-alphaL0_IT-alphaK0_IT-alpha90_IT-alpha50_IT) * X0IT * PX0IT / PX1IT
             + (1-alphaL5_IT-alphaK5_IT-alpha95_IT-alpha65_IT) * X5IT * PX5IT / PX1IT
             + X1IT_DE
             + X1IT_BE
             + X1IT_NL
             + X1IT_FR
             + X1IT_UK
             + X1IT_CN
             + X1IT_JP
             + X1IT_US;
MKT_X2IT..   X2IT + X2DE_IT + X2BE_IT + X2NL_IT + X2FR_IT + X2UK_IT + X2CN_IT + X2JP_IT + X2US_IT =G= WIT * phi2IT * PWIT / PX2IT
             + alpha23_IT * X3IT * PX3IT / PX2IT
             + X2IT_DE
             + X2IT_BE
             + X2IT_NL
             + X2IT_FR
             + X2IT_UK
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                    + X2IT_CN
                    + X2IT_JP
                    + X2IT_US;
MKT_X3IT..   X3IT + X3DE_IT + X3BE_IT + X3NL_IT + X3FR_IT + X3UK_IT + X3CN_IT + X3JP_IT + X3US_IT =G= WIT * phi3IT * PWIT / PX3IT
                    + X3IT_DE
                    + X3IT_BE
                    + X3IT_NL
                    + X3IT_FR
                    + X3IT_UK
                    + X3IT_CN
                    + X3IT_JP
                    + X3IT_US;
MKT_X5IT..   X5IT + X5DE_IT + X5BE_IT + X5NL_IT + X5FR_IT + X5UK_IT + X5CN_IT + X5JP_IT + X5US_IT =G= WIT * phi5IT * PWIT / PX5IT
                    + alpha50_IT * X0IT * PX0IT / PX5IT
                    + (1-alphaL2_IT-alphaK2_IT-alpha92_IT-alpha62_IT) * X2IT * PX2IT / PX5IT
                    + alpha56_IT * X6IT * PX6IT / PX5IT
                    + X5IT_DE
                    + X5IT_BE
                    + X5IT_NL
                    + X5IT_FR
                    + X5IT_UK
                    + X5IT_CN
                    + X5IT_JP
                    + X5IT_US;
MKT_X6IT..   X6IT + X6DE_IT + X6BE_IT + X6NL_IT + X6FR_IT + X6UK_IT + X6CN_IT + X6JP_IT + X6US_IT =G= WIT * phi6IT * PWIT / PX6IT
                    + (1-alphaL1_IT-alphaK1_IT-alpha91_IT-alpha01_IT) * X1IT * PX1IT / PX6IT
                    + alpha62_IT * X2IT * PX2IT / PX6IT
                    + (1-alphaL3_IT-alphaK3_IT-alpha23_IT-alpha93_IT) * X3IT * PX3IT / PX6IT
                    + alpha65_IT * X5IT * PX5IT / PX6IT
                    + alpha67_IT * X7IT * PX7IT / PX6IT
                    + alpha68_IT * X8IT * PX8IT / PX6IT
                    + alpha69_IT * X9IT * PX9IT / PX6IT
                    + X6IT_DE
                    + X6IT_BE
                    + X6IT_NL
                    + X6IT_FR
                    + X6IT_UK
                    + X6IT_CN
                    + X6IT_JP
                    + X6IT_US;
MKT_X7IT..   X7IT + X7DE_IT + X7BE_IT + X7NL_IT + X7FR_IT + X7UK_IT + X7CN_IT + X7JP_IT + X7US_IT =G= WIT * phi7IT * PWIT / PX7IT
                    + (1-alphaL6_IT-alphaK6_IT-alpha96_IT-alpha56_IT) * X6IT * PX6IT / PX7IT
                    + (1-alphaL8_IT-alphaK8_IT-alpha98_IT-alpha68_IT) * X8IT * PX8IT / PX7IT
                    + (1-alphaL9_IT-alphaK9_IT-alpha69_IT-alpha89_IT) * X9IT * PX8IT / PX7IT
                    + X7IT_DE
                    + X7IT_BE
                    + X7IT_NL
                    + X7IT_FR
                    + X7IT_UK
                    + X7IT_CN
                    + X7IT_JP
                    + X7IT_US;
MKT_X8IT..   X8IT + X8DE_IT + X8BE_IT + X8NL_IT + X8FR_IT + X8UK_IT + X8CN_IT + X8JP_IT + X8US_IT =G= WIT * phi8IT * PWIT / PX8IT
                    + (1-alphaL7_IT-alphaK7_IT-alpha97_IT-alpha67_IT) * X7IT * PX7IT / PX8IT
                    + alpha89_IT * X9IT * PX9IT / PX8IT
                    + X8IT_DE
                    + X8IT_BE
                    + X8IT_NL
                    + X8IT_FR
                    + X8IT_UK
                    + X8IT_CN
                    + X8IT_JP
                    + X8IT_US;
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MKT_X9IT..   X9IT + X9DE_IT + X9BE_IT + X9NL_IT + X9FR_IT + X9UK_IT + X9CN_IT + X9JP_IT + X9US_IT =G= WIT * (1-phi0IT-phi1IT-phi2IT-phi3IT-
phi5IT-phi6IT-phi7IT-phi8IT) * PWIT / PX9IT
              + alpha90_IT * X0IT * PX0IT / PX9IT
              + alpha91_IT * X1IT * PX1IT / PX9IT
              + alpha92_IT * X2IT * PX2IT / PX9IT
              + alpha93_IT * X3IT * PX3IT / PX9IT
              + alpha95_IT * X5IT * PX5IT / PX9IT
              + alpha96_IT * X6IT * PX6IT / PX9IT
              + alpha97_IT * X7IT * PX7IT / PX9IT
              + alpha98_IT * X8IT * PX8IT / PX9IT
              + X9IT_DE
              + X9IT_BE
              + X9IT_NL
              + X9IT_FR
              + X9IT_UK
              + X9IT_CN
              + X9IT_JP
              + X9IT_US;
MKT_WIT..   WIT * PWIT =E= CONSIT / 1;

*   FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LIT..   LIT =G= alphaL0_IT * X0IT * PX0IT / PLIT
              + alphaL1_IT * X1IT * PX1IT / PLIT
              + alphaL2_IT * X2IT * PX2IT / PLIT
              + alphaL3_IT * X3IT * PX3IT / PLIT
              + alphaL5_IT * X5IT * PX5IT / PLIT
              + alphaL6_IT * X6IT * PX6IT / PLIT
              + alphaL7_IT * X7IT * PX7IT / PLIT
              + alphaL8_IT * X8IT * PX8IT / PLIT
              + alphaL9_IT * X9IT * PX9IT / PLIT;
MKT_KIT..   KIT =G= (alphaK0_IT) * X0IT * PX0IT / PKIT
              + (alphaK1_IT) * X1IT * PX1IT / PKIT
              + (alphaK2_IT) * X2IT * PX2IT / PKIT
              + (alphaK3_IT) * X3IT * PX3IT / PKIT
              + (alphaK5_IT) * X5IT * PX5IT / PKIT
              + (alphaK6_IT) * X6IT * PX6IT / PKIT
              + (alphaK7_IT) * X7IT * PX7IT / PKIT
              + (alphaK8_IT) * X8IT * PX8IT / PKIT
              + (alphaK9_IT) * X9IT * PX9IT / PKIT;

*   DEFINITION OF INCOME

I_CONSIT..   CONSIT =E= LIT*PLIT + KIT*PKIT
              + TX0IT * PX0CN * X0CN_IT + TX1IT * PX1CN * X1CN_IT + TX2IT * PX2CN * X2CN_IT + TX3IT * PX3CN * X3CN_IT
              + TX5IT * PX5CN * X5CN_IT + TX6IT * PX6CN * X6CN_IT + TX7IT * PX7CN * X7CN_IT + TX8IT * PX8CN * X8CN_IT
              + TX9IT * PX9CN * X9CN_IT
              + TX0IT * PX0JP * X0JP_IT + TX1IT * PX1JP * X1JP_IT + TX2IT * PX2JP * X2JP_IT + TX3IT * PX3JP * X3JP_IT
              + TX5IT * PX5JP * X5JP_IT + TX6IT * PX6JP * X6JP_IT + TX7IT * PX7JP * X7JP_IT + TX8IT * PX8JP * X8JP_IT
              + TX9IT * PX9JP * X9JP_IT
              + TX0IT * PX0US * X0US_IT + TX1IT * PX1US * X1US_IT + TX2IT * PX2US * X2US_IT + TX3IT * PX3US * X3US_IT
              + TX5IT * PX5US * X5US_IT + TX6IT * PX6US * X6US_IT + TX7IT * PX7US * X7US_IT + TX8IT * PX8US * X8US_IT
              + TX9IT * PX9US * X9US_IT;

*   ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_IT.. TOT_IMP_0_IT =E= X0NL_IT + X0DE_IT + X0BE_IT + X0FR_IT + X0UK_IT + X0CN_IT + X0JP_IT + X0US_IT;
I_TOT_EXP_0_IT.. TOT_EXP_0_IT =E= X0IT_NL + X0IT_DE + X0IT_BE + X0IT_FR + X0IT_UK + X0IT_CN + X0IT_JP + X0IT_US;
I_NET_EXP_0_IT.. NET_EXP_0_IT =E= TOT_EXP_0_IT - TOT_IMP_0_IT;
I_TOT_IMP_1_IT.. TOT_IMP_1_IT =E= X1NL_IT + X1DE_IT + X1BE_IT + X1FR_IT + X1UK_IT + X1CN_IT + X1JP_IT + X1US_IT;
I_TOT_EXP_1_IT.. TOT_EXP_1_IT =E= X1IT_NL + X1IT_DE + X1IT_BE + X1IT_FR + X1IT_UK + X1IT_CN + X1IT_JP + X1IT_US;
I_NET_EXP_1_IT.. NET_EXP_1_IT =E= TOT_EXP_1_IT - TOT_IMP_1_IT;
I_TOT_IMP_2_IT.. TOT_IMP_2_IT =E= X2NL_IT + X2DE_IT + X2BE_IT + X2FR_IT + X2UK_IT + X2CN_IT + X2JP_IT + X2US_IT;

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I_TOT_EXP_2_IT.. TOT_EXP_2_IT =E= X2IT_NL + X2IT_DE + X2IT_BE + X2IT_FR + X2IT_UK + X2IT_CN + X2IT_JP + X2IT_US;
I_NET_EXP_2_IT.. NET_EXP_2_IT =E= TOT_EXP_2_IT - TOT_IMP_2_IT;
I_TOT_IMP_3_IT.. TOT_IMP_3_IT =E= X3NL_IT + X3DE_IT + X3BE_IT + X3FR_IT + X3UK_IT + X3CN_IT + X3JP_IT + X3US_IT;
I_TOT_EXP_3_IT.. TOT_EXP_3_IT =E= X3IT_NL + X3IT_DE + X3IT_BE + X3IT_FR + X3IT_UK + X3IT_CN + X3IT_JP + X3IT_US;
I_NET_EXP_3_IT.. NET_EXP_3_IT =E= TOT_EXP_3_IT - TOT_IMP_3_IT;
I_TOT_IMP_5_IT.. TOT_IMP_5_IT =E= X5NL_IT + X5DE_IT + X5BE_IT + X5FR_IT + X5UK_IT + X5CN_IT + X5JP_IT + X5US_IT;
I_TOT_EXP_5_IT.. TOT_EXP_5_IT =E= X5IT_NL + X5IT_DE + X5IT_BE + X5IT_FR + X5IT_UK + X5IT_CN + X5IT_JP + X5IT_US;
I_NET_EXP_5_IT.. NET_EXP_5_IT =E= TOT_EXP_5_IT - TOT_IMP_5_IT;
I_TOT_IMP_6_IT.. TOT_IMP_6_IT =E= X6NL_IT + X6DE_IT + X6BE_IT + X6FR_IT + X6UK_IT + X6CN_IT + X6JP_IT + X6US_IT;
I_TOT_EXP_6_IT.. TOT_EXP_6_IT =E= X6IT_NL + X6IT_DE + X6IT_BE + X6IT_FR + X6IT_UK + X6IT_CN + X6IT_JP + X6IT_US;
I_NET_EXP_6_IT.. NET_EXP_6_IT =E= TOT_EXP_6_IT - TOT_IMP_6_IT;
I_TOT_IMP_7_IT.. TOT_IMP_7_IT =E= X7NL_IT + X7DE_IT + X7BE_IT + X7FR_IT + X7UK_IT + X7CN_IT + X7JP_IT + X7US_IT;
I_TOT_EXP_7_IT.. TOT_EXP_7_IT =E= X7IT_NL + X7IT_DE + X7IT_BE + X7IT_FR + X7IT_UK + X7IT_CN + X7IT_JP + X7IT_US;
I_NET_EXP_7_IT.. NET_EXP_7_IT =E= TOT_EXP_7_IT - TOT_IMP_7_IT;
I_TOT_IMP_8_IT.. TOT_IMP_8_IT =E= X8NL_IT + X8DE_IT + X8BE_IT + X8FR_IT + X8UK_IT + X8CN_IT + X8JP_IT + X8US_IT;
I_TOT_EXP_8_IT.. TOT_EXP_8_IT =E= X8IT_NL + X8IT_DE + X8IT_BE + X8IT_FR + X8IT_UK + X8IT_CN + X8IT_JP + X8IT_US;
I_NET_EXP_8_IT.. NET_EXP_8_IT =E= TOT_EXP_8_IT - TOT_IMP_8_IT;
I_TOT_IMP_9_IT.. TOT_IMP_9_IT =E= X9NL_IT + X9DE_IT + X9BE_IT + X9FR_IT + X9UK_IT + X9CN_IT + X9JP_IT + X9US_IT;
I_TOT_EXP_9_IT.. TOT_EXP_9_IT =E= X9IT_NL + X9IT_DE + X9IT_BE + X9IT_FR + X9IT_UK + X9IT_CN + X9IT_JP + X9IT_US;
I_NET_EXP_9_IT.. NET_EXP_9_IT =E= TOT_EXP_9_IT - TOT_IMP_9_IT;
I_TARIFF_INC_IT.. TARIFF_INC_IT =E= TX0IT * PX0CN * X0CN_IT + TX1IT * PX1CN * X1CN_IT + TX2IT * PX2CN * X2CN_IT + TX3IT * PX3CN * X3CN_IT
             + TX5IT * PX5CN * X5CN_IT + TX6IT * PX6CN * X6CN_IT + TX7IT * PX7CN * X7CN_IT + TX8IT * PX8CN * X8CN_IT
             + TX9IT * PX9CN * X9CN_IT
             + TX0IT * PX0JP * X0JP_IT + TX1IT * PX1JP * X1JP_IT + TX2IT * PX2JP * X2JP_IT + TX3IT * PX3JP * X3JP_IT
             + TX5IT * PX5JP * X5JP_IT + TX6IT * PX6JP * X6JP_IT + TX7IT * PX7JP * X7JP_IT + TX8IT * PX8JP * X8JP_IT
             + TX9IT * PX9JP * X9JP_IT
             + TX0IT * PX0US * X0US_IT + TX1IT * PX1US * X1US_IT + TX2IT * PX2US * X2US_IT + TX3IT * PX3US * X3US_IT
             + TX5IT * PX5US * X5US_IT + TX6IT * PX6US * X6US_IT + TX7IT * PX7US * X7US_IT + TX8IT * PX8US * X8US_IT
             + TX9IT * PX9US * X9US_IT;

*   CHINA

*   ZERO PROFIT CONDITIONS

PRF_X0CN..   PLCN**(alphaL0_CN) * PKCN**(alphaK0_CN) * PX1CN**(alpha10_CN) * PX9CN**(alpha90_CN)
          * PX5CN**(1-alphaL0_CN-alphaK0_CN-alpha10_CN-alpha90_CN) =G= PX0CN;
PRF_X1CN..   PLCN**(alphaL1_CN) * PKCN**(alphaK1_CN) * PX0CN**(alpha01_CN) * PX9CN**(alpha91_CN)
          * PX6CN**(1-alphaL1_CN-alphaK1_CN-alpha01_CN-alpha91_CN) =G= PX1CN;
PRF_X2CN..   PLCN**(alphaL2_CN) * PKCN**(alphaK2_CN) * PX9CN**(alpha92_CN) * PX6CN**(alpha62_CN)
          * PX7CN**(1-alphaL2_CN-alphaK2_CN-alpha92_CN-alpha62_CN) =G= PX2CN;
PRF_X3CN..   PLCN**(alphaL3_CN) * PKCN**(alphaK3_CN) * PX2CN**(alpha23_CN) * PX9CN**(alpha93_CN)
          * PX7CN**(1-alphaL3_CN-alphaK3_CN-alpha23_CN-alpha93_CN) =G= PX3CN;
PRF_X5CN..   PLCN**(alphaL5_CN) * PKCN**(alphaK5_CN) * PX9CN**(alpha95_CN) * PX2CN**(alpha25_CN)
          * PX3CN**(1-alphaL5_CN-alphaK5_CN-alpha95_CN-alpha25_CN) =G= PX5CN;
PRF_X6CN..   PLCN**(alphaL6_CN) * PKCN**(alphaK6_CN) * PX9CN**(alpha96_CN) * PX5CN**(alpha56_CN)
          * PX2CN**(1-alphaL6_CN-alphaK6_CN-alpha96_CN-alpha56_CN) =G= PX6CN;
PRF_X7CN..   PLCN**(alphaL7_CN) * PKCN**(alphaK7_CN) * PX6CN**(alpha67_CN) * PX9CN**(alpha97_CN)
          * PX8CN**(1-alphaL7_CN-alphaK7_CN-alpha67_CN-alpha97_CN) =G= PX7CN;
PRF_X8CN..   PLCN**(alphaL8_CN) * PKCN**(alphaK8_CN) * PX6CN**(alpha68_CN) * PX9CN**(alpha98_CN)
          * PX5CN**(1-alphaL8_CN-alphaK8_CN-alpha68_CN-alpha98_CN) =G= PX8CN;
PRF_X9CN..   PLCN**(alphaL9_CN) * PKCN**(alphaK9_CN) * PX6CN**(alpha69_CN) * PX8CN**(alpha89_CN)
          * PX3CN**(1-alphaL9_CN-alphaK9_CN-alpha69_CN-alpha89_CN) =G= PX9CN;
PRF_WCN..   PX0CN**(phi0CN) * PX1CN**(phi1CN) * PX2CN**(phi2CN) * PX3CN**(phi3CN) * PX5CN**(phi5CN)* PX6CN**(phi6CN)
       * PX7CN**(phi7CN) * PX8CN**(phi8CN) * PX9CN**(1-phi0CN-phi1CN-phi2CN-phi3CN-phi5CN-phi6CN-phi7CN-phi8CN) =G= PWCN;

*   GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0CN..   X0CN + X0DE_CN + X0BE_CN + X0NL_CN + X0FR_CN + X0UK_CN + X0IT_CN + X0JP_CN + X0US_CN =G= WCN * phi0CN * PWCN /
PX0CN
             + alpha01_CN * X1CN * PX1CN / PX0CN
             + X0CN_DE
             + X0CN_BE
             + X0CN_NL

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                       + X0CN_FR
                       + X0CN_UK
                       + X0CN_IT
                       + X0CN_JP
                       + X0CN_US;
MKT_X1CN..    X1CN + X1DE_CN + X1BE_CN + X1NL_CN + X1FR_CN + X1UK_CN + X1IT_CN + X1JP_CN + X1US_CN =G= WCN * phi1CN * PWCN /
PX1CN
                       + alpha10_CN * X0CN * PX0CN / PX1CN
                       + X1CN_DE
                       + X1CN_BE
                       + X1CN_NL
                       + X1CN_FR
                       + X1CN_UK
                       + X1CN_IT
                       + X1CN_JP
                       + X1CN_US;
MKT_X2CN..    X2CN + X2DE_CN + X2BE_CN + X2NL_CN + X2FR_CN + X2UK_CN + X2IT_CN + X2JP_CN + X2US_CN =G= WCN * phi2CN * PWCN /
PX2CN
                       + alpha23_CN * X3CN * PX3CN / PX2CN
                       + alpha25_CN * X5CN * PX5CN / PX2CN
                       + (1-alphaL6_CN-alphaK6_CN-alpha96_CN-alpha56_CN) * X6CN * PX6CN / PX2CN
                       + X2CN_DE
                       + X2CN_BE
                       + X2CN_NL
                       + X2CN_FR
                       + X2CN_UK
                       + X2CN_IT
                       + X2CN_JP
                       + X2CN_US;
MKT_X3CN..    X3CN + X3DE_CN + X3BE_CN + X3NL_CN + X3FR_CN + X3UK_CN + X3IT_CN + X3JP_CN + X3US_CN =G= WCN * phi3CN * PWCN /
PX3CN
                       + (1-alphaL5_CN-alphaK5_CN-alpha95_CN-alpha25_CN) * X5CN * PX5CN / PX3CN
                       + (1-alphaL9_CN-alphaK9_CN-alpha69_CN-alpha89_CN) * X9CN * PX9CN / PX3CN
                       + X3CN_DE
                       + X3CN_BE
                       + X3CN_NL
                       + X3CN_FR
                       + X3CN_UK
                       + X3CN_IT
                       + X3CN_JP
                       + X3CN_US;
MKT_X5CN..    X5CN + X5DE_CN + X5BE_CN + X5NL_CN + X5FR_CN + X5UK_CN + X5IT_CN + X5JP_CN + X5US_CN =G= WCN * phi5CN * PWCN /
PX5CN
                       + (1-alphaL0_CN-alphaK0_CN-alpha10_CN-alpha90_CN) * X0CN * PX0CN / PX5CN
                       + alpha56_CN * X6CN * PX6CN / PX5CN
                       + (1-alphaL8_CN-alphaK8_CN-alpha68_CN-alpha98_CN) * X8CN * PX8CN / PX5CN
                       + X5CN_DE
                       + X5CN_BE
                       + X5CN_NL
                       + X5CN_FR
                       + X5CN_UK
                       + X5CN_IT
                       + X5CN_JP
                       + X5CN_US;
MKT_X6CN..    X6CN + X6DE_CN + X6BE_CN + X6NL_CN + X6FR_CN + X6UK_CN + X6IT_CN + X6JP_CN + X6US_CN =G= WCN * phi6CN * PWCN /
PX6CN
                       + (1-alphaL1_CN-alphaK1_CN-alpha01_CN-alpha91_CN) * X1CN * PX1CN / PX6CN
                       + alpha62_CN * X2CN * PX2CN / PX6CN
                       + alpha67_CN * X7CN * PX7CN / PX6CN
                       + alpha68_CN * X8CN * PX8CN / PX6CN
                       + alpha69_CN * X9CN * PX9CN / PX6CN
                       + X6CN_DE
                       + X6CN_BE
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                           + X6CN_NL
                           + X6CN_FR
                           + X6CN_UK
                           + X6CN_IT
                           + X6CN_JP
                           + X6CN_US;
MKT_X7CN..    X7CN + X7DE_CN + X7BE_CN + X7NL_CN + X7FR_CN + X7UK_CN + X7IT_CN + X7JP_CN + X7US_CN =G= WCN * phi7CN * PWCN /
PX7CN
                           + (1-alphaL2_CN-alphaK2_CN-alpha92_CN-alpha62_CN) * X2CN * PX2CN / PX7CN
                           + (1-alphaL3_CN-alphaK3_CN-alpha23_CN-alpha93_CN) * X3CN * PX3CN / PX7CN
                           + X7CN_DE
                           + X7CN_BE
                           + X7CN_NL
                           + X7CN_FR
                           + X7CN_UK
                           + X7CN_IT
                           + X7CN_JP
                           + X7CN_US;
MKT_X8CN..    X8CN + X8DE_CN + X8BE_CN + X8NL_CN + X8FR_CN + X8UK_CN + X8IT_CN + X8JP_CN + X8US_CN =G= WCN * phi8CN * PWCN /
PX8CN
                           + (1-alphaL7_CN-alphaK7_CN-alpha67_CN-alpha97_CN) * X7CN * PX7CN / PX8CN
                           + alpha89_CN * X9CN * PX9CN / PX8CN
                           + X8CN_DE
                           + X8CN_BE
                           + X8CN_NL
                           + X8CN_FR
                           + X8CN_UK
                           + X8CN_IT
                           + X8CN_JP
                           + X8CN_US;
MKT_X9CN..    X9CN + X9DE_CN + X9BE_CN + X9NL_CN + X9FR_CN + X9UK_CN + X9IT_CN + X9JP_CN + X9US_CN =G= WCN * (1-phi0CN-phi1CN-
phi2CN-phi3CN-phi5CN-phi6CN-phi7CN-phi8CN) * PWCN / PX9CN
                           + alpha90_CN * X0CN * PX0CN / PX9CN
                           + alpha91_CN * X1CN * PX1CN / PX9CN
                           + alpha92_CN * X2CN * PX2CN / PX9CN
                           + alpha93_CN * X3CN * PX3CN / PX9CN
                           + alpha95_CN * X5CN * PX5CN / PX9CN
                           + alpha96_CN * X6CN * PX6CN / PX9CN
                           + alpha97_CN * X7CN * PX7CN / PX9CN
                           + alpha98_CN * X8CN * PX8CN / PX9CN
                           + X9CN_DE
                           + X9CN_BE
                           + X9CN_NL
                           + X9CN_FR
                           + X9CN_UK
                           + X9CN_IT
                           + X9CN_JP
                           + X9CN_US;
MKT_WCN..     WCN * PWCN =E= CONSCN / 1;

*          FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LCN..     LCN =G=  alphaL0_CN * X0CN * PX0CN / PLCN + alphaL1_CN * X1CN * PX1CN / PLCN + alphaL2_CN * X2CN * PX2CN / PLCN +
alphaL3_CN * X3CN * PX3CN / PLCN
              + alphaL5_CN * X5CN * PX5CN / PLCN + alphaL6_CN * X6CN * PX6CN / PLCN + alphaL7_CN * X7CN * PX7CN / PLCN + alphaL8_CN *
X8CN * PX8CN / PLCN
              + alphaL9_CN * X9CN * PX9CN / PLCN;
MKT_KCN..     KCN =G=  (alphaK0_CN) * X0CN * PX0CN / PKCN + (alphaK1_CN) * X1CN * PX1CN / PKCN + (alphaK2_CN) * X2CN * PX2CN / PKCN
              + (alphaK3_CN) * X3CN * PX3CN / PKCN + (alphaK5_CN) * X5CN * PX5CN / PKCN + (alphaK6_CN) * X6CN * PX6CN / PKCN
              + (alphaK7_CN) * X7CN * PX7CN / PKCN + (alphaK8_CN) * X8CN * PX8CN / PKCN + (alphaK9_CN) * X9CN * PX9CN / PKCN;

*          DEFINITION OF INCOME
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I_CONSCN..   CONSCN =E= LCN*PLCN + KCN*PKCN
            + TX0CN * PX0NL * X0NL_CN + TX1CN * PX1NL * X1NL_CN + TX2CN * PX2NL * X2NL_CN + TX3CN * PX3NL * X3NL_CN
            + TX5CN * PX5NL * X5NL_CN + TX6CN * PX6NL * X6NL_CN + TX7CN * PX7NL * X7NL_CN + TX8CN * PX8NL * X8NL_CN
            + TX9CN * PX9NL * X9NL_CN
            + TX0CN * PX0DE * X0DE_CN + TX1CN * PX1DE * X1DE_CN + TX2CN * PX2DE * X2DE_CN + TX3CN * PX3DE * X3DE_CN
            + TX5CN * PX5DE * X5DE_CN + TX6CN * PX6DE * X6DE_CN + TX7CN * PX7DE * X7DE_CN + TX8CN * PX8DE * X8DE_CN
            + TX9CN * PX9DE * X9DE_CN
            + TX0CN * PX0BE * X0BE_CN + TX1CN * PX1BE * X1BE_CN + TX2CN * PX2BE * X2BE_CN + TX3CN * PX3BE * X3BE_CN
            + TX5CN * PX5BE * X5BE_CN + TX6CN * PX6BE * X6BE_CN + TX7CN * PX7BE * X7BE_CN + TX8CN * PX8BE * X8BE_CN
            + TX9CN * PX9BE * X9BE_CN
            + TX0CN * PX0FR * X0FR_CN + TX1CN * PX1FR * X1FR_CN + TX2CN * PX2FR * X2FR_CN + TX3CN * PX3FR * X3FR_CN
            + TX5CN * PX5FR * X5FR_CN + TX6CN * PX6FR * X6FR_CN + TX7CN * PX7FR * X7FR_CN + TX8CN * PX8FR * X8FR_CN
            + TX9CN * PX9FR * X9FR_CN
            + TX0CN * PX0UK * X0UK_CN + TX1CN * PX1UK * X1UK_CN + TX2CN * PX2UK * X2UK_CN + TX3CN * PX3UK * X3UK_CN
            + TX5CN * PX5UK * X5UK_CN + TX6CN * PX6UK * X6UK_CN + TX7CN * PX7UK * X7UK_CN + TX8CN * PX8UK * X8UK_CN
            + TX9CN * PX9UK * X9UK_CN
            + TX0CN * PX0IT * X0IT_CN + TX1CN * PX1IT * X1IT_CN + TX2CN * PX2IT * X2IT_CN + TX3CN * PX3IT * X3IT_CN
            + TX5CN * PX5IT * X5IT_CN + TX6CN * PX6IT * X6IT_CN + TX7CN * PX7IT * X7IT_CN + TX8CN * PX8IT * X8IT_CN
            + TX9CN * PX9IT * X9IT_CN
            + TX0CN * PX0JP * X0JP_CN + TX1CN * PX1JP * X1JP_CN + TX2CN * PX2JP * X2JP_CN + TX3CN * PX3JP * X3JP_CN
            + TX5CN * PX5JP * X5JP_CN + TX6CN * PX6JP * X6JP_CN + TX7CN * PX7JP * X7JP_CN + TX8CN * PX8JP * X8JP_CN
            + TX9CN * PX9JP * X9JP_CN
            + TX0CN * PX0US * X0US_CN + TX1CN * PX1US * X1US_CN + TX2CN * PX2US * X2US_CN + TX3CN * PX3US * X3US_CN
            + TX5CN * PX5US * X5US_CN + TX6CN * PX6US * X6US_CN + TX7CN * PX7US * X7US_CN + TX8CN * PX8US * X8US_CN
            + TX9CN * PX9US * X9US_CN;

*   ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_CN.. TOT_IMP_0_CN =E= X0NL_CN + X0DE_CN + X0BE_CN + X0FR_CN + X0UK_CN + X0IT_CN + X0JP_CN + X0US_CN;
I_TOT_EXP_0_CN.. TOT_EXP_0_CN =E= X0CN_NL + X0CN_DE + X0CN_BE + X0CN_FR + X0CN_UK + X0CN_IT + X0CN_JP + X0CN_US;
I_NET_EXP_0_CN.. NET_EXP_0_CN =E= TOT_EXP_0_CN - TOT_IMP_0_CN;
I_TOT_IMP_1_CN.. TOT_IMP_1_CN =E= X1NL_CN + X1DE_CN + X1BE_CN + X1FR_CN + X1UK_CN + X1IT_CN + X1JP_CN + X1US_CN;
I_TOT_EXP_1_CN.. TOT_EXP_1_CN =E= X1CN_NL + X1CN_DE + X1CN_BE + X1CN_FR + X1CN_UK + X1CN_IT + X1CN_JP + X1CN_US;
I_NET_EXP_1_CN.. NET_EXP_1_CN =E= TOT_EXP_1_CN - TOT_IMP_1_CN;
I_TOT_IMP_2_CN.. TOT_IMP_2_CN =E= X2NL_CN + X2DE_CN + X2BE_CN + X2FR_CN + X2UK_CN + X2IT_CN + X2JP_CN + X2US_CN;
I_TOT_EXP_2_CN.. TOT_EXP_2_CN =E= X2CN_NL + X2CN_DE + X2CN_BE + X2CN_FR + X2CN_UK + X2CN_IT + X2CN_JP + X2CN_US;
I_NET_EXP_2_CN.. NET_EXP_2_CN =E= TOT_EXP_2_CN - TOT_IMP_2_CN;
I_TOT_IMP_3_CN.. TOT_IMP_3_CN =E= X3NL_CN + X3DE_CN + X3BE_CN + X3FR_CN + X3UK_CN + X3IT_CN + X3JP_CN + X3US_CN;
I_TOT_EXP_3_CN.. TOT_EXP_3_CN =E= X3CN_NL + X3CN_DE + X3CN_BE + X3CN_FR + X3CN_UK + X3CN_IT + X3CN_JP + X3CN_US;
I_NET_EXP_3_CN.. NET_EXP_3_CN =E= TOT_EXP_3_CN - TOT_IMP_3_CN;
I_TOT_IMP_5_CN.. TOT_IMP_5_CN =E= X5NL_CN + X5DE_CN + X5BE_CN + X5FR_CN + X5UK_CN + X5IT_CN + X5JP_CN + X5US_CN;
I_TOT_EXP_5_CN.. TOT_EXP_5_CN =E= X5CN_NL + X5CN_DE + X5CN_BE + X5CN_FR + X5CN_UK + X5CN_IT + X5CN_JP + X5CN_US;
I_NET_EXP_5_CN.. NET_EXP_5_CN =E= TOT_EXP_5_CN - TOT_IMP_5_CN;
I_TOT_IMP_6_CN.. TOT_IMP_6_CN =E= X6NL_CN + X6DE_CN + X6BE_CN + X6FR_CN + X6UK_CN + X6IT_CN + X6JP_CN + X6US_CN;
I_TOT_EXP_6_CN.. TOT_EXP_6_CN =E= X6CN_NL + X6CN_DE + X6CN_BE + X6CN_FR + X6CN_UK + X6CN_IT + X6CN_JP + X6CN_US;
I_NET_EXP_6_CN.. NET_EXP_6_CN =E= TOT_EXP_6_CN - TOT_IMP_6_CN;
I_TOT_IMP_7_CN.. TOT_IMP_7_CN =E= X7NL_CN + X7DE_CN + X7BE_CN + X7FR_CN + X7UK_CN + X7IT_CN + X7JP_CN + X7US_CN;
I_TOT_EXP_7_CN.. TOT_EXP_7_CN =E= X7CN_NL + X7CN_DE + X7CN_BE + X7CN_FR + X7CN_UK + X7CN_IT + X7CN_JP + X7CN_US;
I_NET_EXP_7_CN.. NET_EXP_7_CN =E= TOT_EXP_7_CN - TOT_IMP_7_CN;
I_TOT_IMP_8_CN.. TOT_IMP_8_CN =E= X8NL_CN + X8DE_CN + X8BE_CN + X8FR_CN + X8UK_CN + X8IT_CN + X8JP_CN + X8US_CN;
I_TOT_EXP_8_CN.. TOT_EXP_8_CN =E= X8CN_NL + X8CN_DE + X8CN_BE + X8CN_FR + X8CN_UK + X8CN_IT + X8CN_JP + X8CN_US;
I_NET_EXP_8_CN.. NET_EXP_8_CN =E= TOT_EXP_8_CN - TOT_IMP_8_CN;
I_TOT_IMP_9_CN.. TOT_IMP_9_CN =E= X9NL_CN + X9DE_CN + X9BE_CN + X9FR_CN + X9UK_CN + X9IT_CN + X9JP_CN + X9US_CN;
I_TOT_EXP_9_CN.. TOT_EXP_9_CN =E= X9CN_NL + X9CN_DE + X9CN_BE + X9CN_FR + X9CN_UK + X9CN_IT + X9CN_JP + X9CN_US;
I_NET_EXP_9_CN.. NET_EXP_9_CN =E= TOT_EXP_9_CN - TOT_IMP_9_CN;
I_TARIFF_INC_CN.. TARIFF_INC_CN =E= TX0CN * PX0NL * X0NL_CN + TX1CN * PX1NL * X1NL_CN + TX2CN * PX2NL * X2NL_CN + TX3CN * PX3NL * X3NL_CN
            + TX5CN * PX5NL * X5NL_CN + TX6CN * PX6NL * X6NL_CN + TX7CN * PX7NL * X7NL_CN + TX8CN * PX8NL * X8NL_CN
            + TX9CN * PX9NL * X9NL_CN
            + TX0CN * PX0DE * X0DE_CN + TX1CN * PX1DE * X1DE_CN + TX2CN * PX2DE * X2DE_CN + TX3CN * PX3DE * X3DE_CN
            + TX5CN * PX5DE * X5DE_CN + TX6CN * PX6DE * X6DE_CN + TX7CN * PX7DE * X7DE_CN + TX8CN * PX8DE * X8DE_CN
            + TX9CN * PX9DE * X9DE_CN
            + TX0CN * PX0BE * X0BE_CN + TX1CN * PX1BE * X1BE_CN + TX2CN * PX2BE * X2BE_CN + TX3CN * PX3BE * X3BE_CN

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        + TX5CN * PX5BE * X5BE_CN + TX6CN * PX6BE * X6BE_CN + TX7CN * PX7BE * X7BE_CN + TX8CN * PX8BE * X8BE_CN
        + TX9CN * PX9BE * X9BE_CN
        + TX0CN * PX0FR * X0FR_CN + TX1CN * PX1FR * X1FR_CN + TX2CN * PX2FR * X2FR_CN + TX3CN * PX3FR * X3FR_CN
        + TX5CN * PX5FR * X5FR_CN + TX6CN * PX6FR * X6FR_CN + TX7CN * PX7FR * X7FR_CN + TX8CN * PX8FR * X8FR_CN
        + TX9CN * PX9FR * X9FR_CN
        + TX0CN * PX0UK * X0UK_CN + TX1CN * PX1UK * X1UK_CN + TX2CN * PX2UK * X2UK_CN + TX3CN * PX3UK * X3UK_CN
        + TX5CN * PX5UK * X5UK_CN + TX6CN * PX6UK * X6UK_CN + TX7CN * PX7UK * X7UK_CN + TX8CN * PX8UK * X8UK_CN
        + TX9CN * PX9UK * X9UK_CN
        + TX0CN * PX0IT * X0IT_CN + TX1CN * PX1IT * X1IT_CN + TX2CN * PX2IT * X2IT_CN + TX3CN * PX3IT * X3IT_CN
        + TX5CN * PX5IT * X5IT_CN + TX6CN * PX6IT * X6IT_CN + TX7CN * PX7IT * X7IT_CN + TX8CN * PX8IT * X8IT_CN
        + TX9CN * PX9IT * X9IT_CN
        + TX0CN * PX0JP * X0JP_CN + TX1CN * PX1JP * X1JP_CN + TX2CN * PX2JP * X2JP_CN + TX3CN * PX3JP * X3JP_CN
        + TX5CN * PX5JP * X5JP_CN + TX6CN * PX6JP * X6JP_CN + TX7CN * PX7JP * X7JP_CN + TX8CN * PX8JP * X8JP_CN
        + TX9CN * PX9JP * X9JP_CN
        + TX0CN * PX0US * X0US_CN + TX1CN * PX1US * X1US_CN + TX2CN * PX2US * X2US_CN + TX3CN * PX3US * X3US_CN
        + TX5CN * PX5US * X5US_CN + TX6CN * PX6US * X6US_CN + TX7CN * PX7US * X7US_CN + TX8CN * PX8US * X8US_CN
        + TX9CN * PX9US * X9US_CN;

*       JAPAN

*           ZERO PROFIT CONDITIONS

PRF_X0JP..  PLJP**(alphaL0_JP) * PKJP**(alphaK0_JP) * PX9JP**(alpha90_JP)
            * PX5JP**(alpha50_JP) * PX1JP**(1-alphaL0_JP-alphaK0_JP-alpha90_JP-alpha50_JP) =G= PX0JP;
PRF_X1JP..  PLJP**(alphaL1_JP) * PKJP**(alphaK1_JP) * PX9JP**(alpha91_JP)
            * PX0JP**(alpha01_JP) * PX6JP**(1-alphaL1_JP-alphaK1_JP-alpha91_JP-alpha01_JP) =G= PX1JP;
PRF_X2JP..  PLJP**(alphaL2_JP) * PKJP**(alphaK2_JP) * PX9JP**(alpha92_JP)
            * PX3JP**(alpha32_JP) * PX6JP**(1-alphaL2_JP-alphaK2_JP-alpha92_JP-alpha32_JP) =G= PX2JP;
PRF_X3JP..  PLJP**(alphaL3_JP) * PKJP**(alphaK3_JP) * PX2JP**(alpha23_JP)
            * PX9JP**(alpha93_JP) * PX6JP**(1-alphaL3_JP-alphaK3_JP-alpha23_JP-alpha93_JP) =G= PX3JP;
PRF_X5JP..  PLJP**(alphaL5_JP) * PKJP**(alphaK5_JP) * PX9JP**(alpha95_JP)
            * PX3JP**(alpha35_JP) * PX6JP**(1-alphaL5_JP-alphaK5_JP-alpha95_JP-alpha35_JP) =G= PX5JP;
PRF_X6JP..  PLJP**(alphaL6_JP) * PKJP**(alphaK6_JP) * PX9JP**(alpha96_JP)
            * PX5JP**(alpha56_JP) * PX3JP**(1-alphaL6_JP-alphaK6_JP-alpha96_JP-alpha56_JP) =G= PX6JP;
PRF_X7JP..  PLJP**(alphaL7_JP) * PKJP**(alphaK7_JP) * PX9JP**(alpha97_JP)
            * PX6JP**(alpha67_JP) * PX8JP**(1-alphaL7_JP-alphaK7_JP-alpha97_JP-alpha67_JP) =G= PX7JP;
PRF_X8JP..  PLJP**(alphaL8_JP) * PKJP**(alphaK8_JP) * PX9JP**(alpha98_JP)
            * PX6JP**(alpha68_JP) * PX5JP**(1-alphaL8_JP-alphaK8_JP-alpha98_JP-alpha68_JP) =G= PX8JP;
PRF_X9JP..  PLJP**(alphaL9_JP) * PKJP**(alphaK9_JP) * PX6JP**(alpha69_JP)
            * PX3JP**(alpha39_JP) * PX5JP**(1-alphaL9_JP-alphaK9_JP-alpha69_JP-alpha39_JP) =G= PX9JP;
PRF_WJP..   PX0JP**(phi0JP) * PX1JP**(phi1JP) * PX2JP**(phi2JP) * PX3JP**(phi3JP) * PX5JP**(phi5JP)* PX6JP**(phi6JP)
        * PX7JP**(phi7JP) * PX8JP**(phi8JP) * PX9JP**(1-phi0JP-phi1JP-phi2JP-phi3JP-phi5JP-phi6JP-phi7JP-phi8JP) =G= PWJP;

*           GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0JP..  X0JP + X0DE_JP + X0BE_JP + X0NL_JP + X0FR_JP + X0UK_JP + X0IT_JP + X0CN_JP + X0US_JP =G= WJP * phi0JP * PWJP / PX0JP
            + alpha01_JP * X1JP * PX1JP / PX0JP
            + X0JP_DE
            + X0JP_BE
            + X0JP_NL
            + X0JP_FR
            + X0JP_UK
            + X0JP_IT
            + X0JP_CN
            + X0JP_US;
MKT_X1JP..  X1JP + X1DE_JP + X1BE_JP + X1NL_JP + X1FR_JP + X1UK_JP + X1IT_JP + X1CN_JP + X1US_JP =G= WJP * phi1JP * PWJP / PX1JP
            + (1-alphaL0_JP-alphaK0_JP-alpha90_JP-alpha50_JP) * X0JP * PX0JP / PX1JP
            + X1JP_DE
            + X1JP_BE
            + X1JP_NL
            + X1JP_FR
            + X1JP_UK
            + X1JP_IT
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                    + X1JP_CN
                    + X1JP_US;
MKT_X2JP..    X2JP + X2DE_JP + X2BE_JP + X2NL_JP + X2FR_JP + X2UK_JP + X2IT_JP + X2CN_JP + X2US_JP =G= WJP * phi2JP * PWJP / PX2JP
                    + alpha23_JP * X3JP * PX3JP / PX2JP
                    + X2JP_DE
                    + X2JP_BE
                    + X2JP_NL
                    + X2JP_FR
                    + X2JP_UK
                    + X2JP_IT
                    + X2JP_CN
                    + X2JP_US;
MKT_X3JP..    X3JP + X3DE_JP + X3BE_JP + X3NL_JP + X3FR_JP + X3UK_JP + X3IT_JP + X3CN_JP + X3US_JP =G= WJP * phi3JP * PWJP / PX3JP
                    + alpha32_JP * X2JP * PX2JP / PX3JP
                    + alpha35_JP * X5JP * PX5JP / PX3JP
                    + (1-alphaL6_JP-alphaK6_JP-alpha96_JP-alpha56_JP) * X6JP * PX6JP / PX3JP
                    + alpha39_JP * X9JP * PX9JP / PX3JP
                    + X3JP_DE
                    + X3JP_BE
                    + X3JP_NL
                    + X3JP_FR
                    + X3JP_UK
                    + X3JP_IT
                    + X3JP_CN
                    + X3JP_US;
MKT_X5JP..    X5JP + X5DE_JP + X5BE_JP + X5NL_JP + X5FR_JP + X5UK_JP + X5IT_JP + X5CN_JP + X5US_JP =G= WJP * phi5JP * PWJP / PX5JP
                    + alpha50_JP * X0JP * PX0JP / PX5JP
                    + alpha56_JP * X6JP * PX6JP / PX5JP
                    + (1-alphaL8_JP-alphaK8_JP-alpha98_JP-alpha68_JP) * X8JP * PX8JP / PX5JP
                    + (1-alphaL9_JP-alphaK9_JP-alpha69_JP-alpha39_JP) * X9JP * PX9JP / PX5JP
                    + X5JP_DE
                    + X5JP_BE
                    + X5JP_NL
                    + X5JP_FR
                    + X5JP_UK
                    + X5JP_IT
                    + X5JP_CN
                    + X5JP_US;
MKT_X6JP..    X6JP + X6DE_JP + X6BE_JP + X6NL_JP + X6FR_JP + X6UK_JP + X6IT_JP + X6CN_JP + X6US_JP =G= WJP * phi6JP * PWJP / PX6JP
                    + (1-alphaL1_JP-alphaK1_JP-alpha91_JP-alpha01_JP) * X1JP * PX1JP / PX6JP
                    + (1-alphaL2_JP-alphaK2_JP-alpha92_JP-alpha32_JP) * X2JP * PX2JP / PX6JP
                    + (1-alphaL3_JP-alphaK3_JP-alpha23_JP-alpha93_JP) * X3JP * PX3JP / PX6JP
                    + (1-alphaL5_JP-alphaK5_JP-alpha95_JP-alpha35_JP) * X5JP * PX5JP / PX6JP
                    + alpha67_JP * X7JP * PX7JP / PX6JP
                    + alpha68_JP * X8JP * PX8JP / PX6JP
                    + alpha69_JP * X9JP * PX9JP / PX6JP
                    + X6JP_DE
                    + X6JP_BE
                    + X6JP_NL
                    + X6JP_FR
                    + X6JP_UK
                    + X6JP_IT
                    + X6JP_CN
                    + X6JP_US;
MKT_X7JP..    X7JP + X7DE_JP + X7BE_JP + X7NL_JP + X7FR_JP + X7UK_JP + X7IT_JP + X7CN_JP + X7US_JP =G= WJP * phi7JP * PWJP / PX7JP
                    + X7JP_DE
                    + X7JP_BE
                    + X7JP_NL
                    + X7JP_FR
                    + X7JP_UK
                    + X7JP_IT
                    + X7JP_CN
                    + X7JP_US;
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MKT_X8JP..   X8JP + X8DE_JP + X8BE_JP + X8NL_JP + X8FR_JP + X8UK_JP + X8IT_JP + X8CN_JP + X8US_JP =G= WJP * phi8JP * PWJP / PX8JP
                    + (1-alphaL7_JP-alphaK7_JP-alpha97_JP-alpha67_JP) * X7JP * PX7JP / PX8JP
                    + X8JP_DE
                    + X8JP_BE
                    + X8JP_NL
                    + X8JP_FR
                    + X8JP_UK
                    + X8JP_IT
                    + X8JP_CN
                    + X8JP_US;
MKT_X9JP..   X9JP + X9DE_JP + X9BE_JP + X9NL_JP + X9FR_JP + X9UK_JP + X9IT_JP + X9CN_JP + X9US_JP =G= WJP * (1-phi0JP-phi1JP-phi2JP-
phi3JP-phi5JP-phi6JP-phi7JP-phi8JP) * PWJP / PX9JP
                    + alpha90_JP * X0JP * PX0JP / PX9JP
                    + alpha91_JP * X1JP * PX1JP / PX9JP
                    + alpha92_JP * X2JP * PX2JP / PX9JP
                    + alpha93_JP * X3JP * PX3JP / PX9JP
                    + alpha95_JP * X5JP * PX5JP / PX9JP
                    + alpha96_JP * X6JP * PX6JP / PX9JP
                    + alpha97_JP * X7JP * PX7JP / PX9JP
                    + alpha98_JP * X8JP * PX8JP / PX9JP
                    + X9JP_DE
                    + X9JP_BE
                    + X9JP_NL
                    + X9JP_FR
                    + X9JP_UK
                    + X9JP_IT
                    + X9JP_CN
                    + X9JP_US;
MKT_WJP..   WJP * PWJP =E= CONSJP / 1;

*   FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LJP..   LJP =G= alphaL0_JP * X0JP * PX0JP / PLJP + alphaL1_JP * X1JP * PX1JP / PLJP + alphaL2_JP * X2JP * PX2JP / PLJP + alphaL3_JP * X3JP *
PX3JP / PLJP
                    + alphaL5_JP * X5JP * PX5JP / PLJP + alphaL6_JP * X6JP * PX6JP / PLJP + alphaL7_JP * X7JP * PX7JP / PLJP + alphaL8_JP * X8JP * PX8JP /
PLJP
                    + alphaL9_JP * X9JP * PX9JP / PLJP;
MKT_KJP..   KJP =G= (alphaK0_JP) * X0JP * PX0JP / PKJP + (alphaK1_JP) * X1JP * PX1JP / PKJP + (alphaK2_JP) * X2JP * PX2JP / PKJP
                    + (alphaK3_JP) * X3JP * PX3JP / PKJP + (alphaK5_JP) * X5JP * PX5JP / PKJP + (alphaK6_JP) * X6JP * PX6JP / PKJP
                    + (alphaK7_JP) * X7JP * PX7JP / PKJP + (alphaK8_JP) * X8JP * PX8JP / PKJP + (alphaK9_JP) * X9JP * PX9JP / PKJP;

*   DEFINITION OF INCOME

I_CONSJP..   CONSJP =E= LJP*PLJP + KJP*PKJP
                    + TX0JP * PX0NL * X0NL_JP + TX1JP * PX1NL * X1NL_JP + TX2JP * PX2NL * X2NL_JP + TX3JP * PX3NL * X3NL_JP
                    + TX5JP * PX5NL * X5NL_JP + TX6JP * PX6NL * X6NL_JP + TX7JP * PX7NL * X7NL_JP + TX8JP * PX8NL * X8NL_JP
                    + TX9JP * PX9NL * X9NL_JP
                    + TX0JP * PX0DE * X0DE_JP + TX1JP * PX1DE * X1DE_JP + TX2JP * PX2DE * X2DE_JP + TX3JP * PX3DE * X3DE_JP
                    + TX5JP * PX5DE * X5DE_JP + TX6JP * PX6DE * X6DE_JP + TX7JP * PX7DE * X7DE_JP + TX8JP * PX8DE * X8DE_JP
                    + TX9JP * PX9DE * X9DE_JP
                    + TX0JP * PX0BE * X0BE_JP + TX1JP * PX1BE * X1BE_JP + TX2JP * PX2BE * X2BE_JP + TX3JP * PX3BE * X3BE_JP
                    + TX5JP * PX5BE * X5BE_JP + TX6JP * PX6BE * X6BE_JP + TX7JP * PX7BE * X7BE_JP + TX8JP * PX8BE * X8BE_JP
                    + TX9JP * PX9BE * X9BE_JP
                    + TX0JP * PX0FR * X0FR_JP + TX1JP * PX1FR * X1FR_JP + TX2JP * PX2FR * X2FR_JP + TX3JP * PX3FR * X3FR_JP
                    + TX5JP * PX5FR * X5FR_JP + TX6JP * PX6FR * X6FR_JP + TX7JP * PX7FR * X7FR_JP + TX8JP * PX8FR * X8FR_JP
                    + TX9JP * PX9FR * X9FR_JP
                    + TX0JP * PX0UK * X0UK_JP + TX1JP * PX1UK * X1UK_JP + TX2JP * PX2UK * X2UK_JP + TX3JP * PX3UK * X3UK_JP
                    + TX5JP * PX5UK * X5UK_JP + TX6JP * PX6UK * X6UK_JP + TX7JP * PX7UK * X7UK_JP + TX8JP * PX8UK * X8UK_JP
                    + TX9JP * PX9UK * X9UK_JP
                    + TX0JP * PX0IT * X0IT_JP + TX1JP * PX1IT * X1IT_JP + TX2JP * PX2IT * X2IT_JP + TX3JP * PX3IT * X3IT_JP
                    + TX5JP * PX5IT * X5IT_JP + TX6JP * PX6IT * X6IT_JP + TX7JP * PX7IT * X7IT_JP + TX8JP * PX8IT * X8IT_JP
                    + TX9JP * PX9IT * X9IT_JP
                    + TX0JP * PX0CN * X0CN_JP + TX1JP * PX1CN * X1CN_JP + TX2JP * PX2CN * X2CN_JP + TX3JP * PX3CN * X3CN_JP

+ TX5JP * PX5CN * X5CN_JP + TX6JP * PX6CN * X6CN_JP + TX7JP * PX7CN * X7CN_JP + TX8JP * PX8CN * X8CN_JP
+ TX9JP * PX9CN * X9CN_JP
+ TX0JP * PX0US * X0US_JP + TX1JP * PX1US * X1US_JP + TX2JP * PX2US * X2US_JP + TX3JP * PX3US * X3US_JP
+ TX5JP * PX5US * X5US_JP + TX6JP * PX6US * X6US_JP + TX7JP * PX7US * X7US_JP + TX8JP * PX8US * X8US_JP
+ TX9JP * PX9US * X9US_JP;

*   ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_JP.. TOT_IMP_0_JP =E= X0NL_JP + X0DE_JP + X0BE_JP + X0FR_JP + X0UK_JP + X0IT_JP + X0CN_JP + X0US_JP;
I_TOT_EXP_0_JP.. TOT_EXP_0_JP =E= X0JP_NL + X0JP_DE + X0JP_BE + X0JP_FR + X0JP_UK + X0JP_IT + X0JP_CN + X0JP_US;
I_NET_EXP_0_JP.. NET_EXP_0_JP =E= TOT_EXP_0_JP - TOT_IMP_0_JP;
I_TOT_IMP_1_JP.. TOT_IMP_1_JP =E= X1NL_JP + X1DE_JP + X1BE_JP + X1FR_JP + X1UK_JP + X1IT_JP + X1CN_JP + X1US_JP;
I_TOT_EXP_1_JP.. TOT_EXP_1_JP =E= X1JP_NL + X1JP_DE + X1JP_BE + X1JP_FR + X1JP_UK + X1JP_IT + X1JP_CN + X1JP_US;
I_NET_EXP_1_JP.. NET_EXP_1_JP =E= TOT_EXP_1_JP - TOT_IMP_1_JP;
I_TOT_IMP_2_JP.. TOT_IMP_2_JP =E= X2NL_JP + X2DE_JP + X2BE_JP + X2FR_JP + X2UK_JP + X2IT_JP + X2CN_JP + X2US_JP;
I_TOT_EXP_2_JP.. TOT_EXP_2_JP =E= X2JP_NL + X2JP_DE + X2JP_BE + X2JP_FR + X2JP_UK + X2JP_IT + X2JP_CN + X2JP_US;
I_NET_EXP_2_JP.. NET_EXP_2_JP =E= TOT_EXP_2_JP - TOT_IMP_2_JP;
I_TOT_IMP_3_JP.. TOT_IMP_3_JP =E= X3NL_JP + X3DE_JP + X3BE_JP + X3FR_JP + X3UK_JP + X3IT_JP + X3CN_JP + X3US_JP;
I_TOT_EXP_3_JP.. TOT_EXP_3_JP =E= X3JP_NL + X3JP_DE + X3JP_BE + X3JP_FR + X3JP_UK + X3JP_IT + X3JP_CN + X3JP_US;
I_NET_EXP_3_JP.. NET_EXP_3_JP =E= TOT_EXP_3_JP - TOT_IMP_3_JP;
I_TOT_IMP_5_JP.. TOT_IMP_5_JP =E= X5NL_JP + X5DE_JP + X5BE_JP + X5FR_JP + X5UK_JP + X5IT_JP + X5CN_JP + X5US_JP;
I_TOT_EXP_5_JP.. TOT_EXP_5_JP =E= X5JP_NL + X5JP_DE + X5JP_BE + X5JP_FR + X5JP_UK + X5JP_IT + X5JP_CN + X5JP_US;
I_NET_EXP_5_JP.. NET_EXP_5_JP =E= TOT_EXP_5_JP - TOT_IMP_5_JP;
I_TOT_IMP_6_JP.. TOT_IMP_6_JP =E= X6NL_JP + X6DE_JP + X6BE_JP + X6FR_JP + X6UK_JP + X6IT_JP + X6CN_JP + X6US_JP;
I_TOT_EXP_6_JP.. TOT_EXP_6_JP =E= X6JP_NL + X6JP_DE + X6JP_BE + X6JP_FR + X6JP_UK + X6JP_IT + X6JP_CN + X6JP_US;
I_NET_EXP_6_JP.. NET_EXP_6_JP =E= TOT_EXP_6_JP - TOT_IMP_6_JP;
I_TOT_IMP_7_JP.. TOT_IMP_7_JP =E= X7NL_JP + X7DE_JP + X7BE_JP + X7FR_JP + X7UK_JP + X7IT_JP + X7CN_JP + X7US_JP;
I_TOT_EXP_7_JP.. TOT_EXP_7_JP =E= X7JP_NL + X7JP_DE + X7JP_BE + X7JP_FR + X7JP_UK + X7JP_IT + X7JP_CN + X7JP_US;
I_NET_EXP_7_JP.. NET_EXP_7_JP =E= TOT_EXP_7_JP - TOT_IMP_7_JP;
I_TOT_IMP_8_JP.. TOT_IMP_8_JP =E= X8NL_JP + X8DE_JP + X8BE_JP + X8FR_JP + X8UK_JP + X8IT_JP + X8CN_JP + X8US_JP;
I_TOT_EXP_8_JP.. TOT_EXP_8_JP =E= X8JP_NL + X8JP_DE + X8JP_BE + X8JP_FR + X8JP_UK + X8JP_IT + X8JP_CN + X8JP_US;
I_NET_EXP_8_JP.. NET_EXP_8_JP =E= TOT_EXP_8_JP - TOT_IMP_8_JP;
I_TOT_IMP_9_JP.. TOT_IMP_9_JP =E= X9NL_JP + X9DE_JP + X9BE_JP + X9FR_JP + X9UK_JP + X9IT_JP + X9CN_JP + X9US_JP;
I_TOT_EXP_9_JP.. TOT_EXP_9_JP =E= X9JP_NL + X9JP_DE + X9JP_BE + X9JP_FR + X9JP_UK + X9JP_IT + X9JP_CN + X9JP_US;
I_NET_EXP_9_JP.. NET_EXP_9_JP =E= TOT_EXP_9_JP - TOT_IMP_9_JP;
I_TARIFF_INC_JP.. TARIFF_INC_JP =E= TX0JP * PX0NL * X0NL_JP + TX1JP * PX1NL * X1NL_JP + TX2JP * PX2NL * X2NL_JP + TX3JP * PX3NL * X3NL_JP
        + TX5JP * PX5NL * X5NL_JP + TX6JP * PX6NL * X6NL_JP + TX7JP * PX7NL * X7NL_JP + TX8JP * PX8NL * X8NL_JP
        + TX9JP * PX9NL * X9NL_JP
        + TX0JP * PX0DE * X0DE_JP + TX1JP * PX1DE * X1DE_JP + TX2JP * PX2DE * X2DE_JP + TX3JP * PX3DE * X3DE_JP
        + TX5JP * PX5DE * X5DE_JP + TX6JP * PX6DE * X6DE_JP + TX7JP * PX7DE * X7DE_JP + TX8JP * PX8DE * X8DE_JP
        + TX9JP * PX9DE * X9DE_JP
        + TX0JP * PX0BE * X0BE_JP + TX1JP * PX1BE * X1BE_JP + TX2JP * PX2BE * X2BE_JP + TX3JP * PX3BE * X3BE_JP
        + TX5JP * PX5BE * X5BE_JP + TX6JP * PX6BE * X6BE_JP + TX7JP * PX7BE * X7BE_JP + TX8JP * PX8BE * X8BE_JP
        + TX9JP * PX9BE * X9BE_JP
        + TX0JP * PX0FR * X0FR_JP + TX1JP * PX1FR * X1FR_JP + TX2JP * PX2FR * X2FR_JP + TX3JP * PX3FR * X3FR_JP
        + TX5JP * PX5FR * X5FR_JP + TX6JP * PX6FR * X6FR_JP + TX7JP * PX7FR * X7FR_JP + TX8JP * PX8FR * X8FR_JP
        + TX9JP * PX9FR * X9FR_JP
        + TX0JP * PX0UK * X0UK_JP + TX1JP * PX1UK * X1UK_JP + TX2JP * PX2UK * X2UK_JP + TX3JP * PX3UK * X3UK_JP
        + TX5JP * PX5UK * X5UK_JP + TX6JP * PX6UK * X6UK_JP + TX7JP * PX7UK * X7UK_JP + TX8JP * PX8UK * X8UK_JP
        + TX9JP * PX9UK * X9UK_JP
        + TX0JP * PX0IT * X0IT_JP + TX1JP * PX1IT * X1IT_JP + TX2JP * PX2IT * X2IT_JP + TX3JP * PX3IT * X3IT_JP
        + TX5JP * PX5IT * X5IT_JP + TX6JP * PX6IT * X6IT_JP + TX7JP * PX7IT * X7IT_JP + TX8JP * PX8IT * X8IT_JP
        + TX9JP * PX9IT * X9IT_JP
        + TX0JP * PX0CN * X0CN_JP + TX1JP * PX1CN * X1CN_JP + TX2JP * PX2CN * X2CN_JP + TX3JP * PX3CN * X3CN_JP
        + TX5JP * PX5CN * X5CN_JP + TX6JP * PX6CN * X6CN_JP + TX7JP * PX7CN * X7CN_JP + TX8JP * PX8CN * X8CN_JP
        + TX9JP * PX9CN * X9CN_JP
        + TX0JP * PX0US * X0US_JP + TX1JP * PX1US * X1US_JP + TX2JP * PX2US * X2US_JP + TX3JP * PX3US * X3US_JP
        + TX5JP * PX5US * X5US_JP + TX6JP * PX6US * X6US_JP + TX7JP * PX7US * X7US_JP + TX8JP * PX8US * X8US_JP
        + TX9JP * PX9US * X9US_JP;

*   THE UNITED STATES OF AMERICA

*   ZERO PROFIT CONDITIONS

PRF_X0US.. PLUS**(alphaL0_US) * PKUS**(alphaK0_US) * PX9US**(alpha90_US) * PX1US**(alpha10_US)
        * PX3US**(1-alphaL0_US-alphaK0_US-alpha90_US-alpha10_US) =G= PX0US;
PRF_X1US.. PLUS**(alphaL1_US) * PKUS**(alphaK1_US) * PX9US**(alpha91_US) * PX0US**(alpha01_US)
        * PX6US**(1-alphaL1_US-alphaK1_US-alpha91_US-alpha01_US) =G= PX1US;
PRF_X2US.. PLUS**(alphaL2_US) * PKUS**(alphaK2_US) * PX9US**(alpha92_US) * PX7US**(alpha72_US)
        * PX6US**(1-alphaL2_US-alphaK2_US-alpha92_US-alpha72_US) =G= PX2US;
PRF_X3US.. PLUS**(alphaL3_US) * PKUS**(alphaK3_US) * PX2US**(alpha23_US) * PX9US**(alpha93_US)
        * PX5US**(1-alphaL3_US-alphaK3_US-alpha23_US-alpha93_US) =G= PX3US;
PRF_X5US.. PLUS**(alphaL5_US) * PKUS**(alphaK5_US) * PX9US**(alpha95_US) * PX6US**(alpha65_US)
        * PX3US**(1-alphaL5_US-alphaK5_US-alpha95_US-alpha65_US) =G= PX5US;
PRF_X6US.. PLUS**(alphaL6_US) * PKUS**(alphaK6_US) * PX9US**(alpha96_US) * PX5US**(alpha56_US)
        * PX2US**(1-alphaL6_US-alphaK6_US-alpha96_US-alpha56_US) =G= PX6US;
PRF_X7US.. PLUS**(alphaL7_US) * PKUS**(alphaK7_US) * PX9US**(alpha97_US) * PX6US**(alpha67_US)
        * PX8US**(1-alphaL7_US-alphaK7_US-alpha97_US-alpha67_US) =G= PX7US;
PRF_X8US.. PLUS**(alphaL8_US) * PKUS**(alphaK8_US) * PX9US**(alpha98_US) * PX6US**(alpha68_US)
        * PX5US**(1-alphaL8_US-alphaK8_US-alpha98_US-alpha68_US) =G= PX8US;
PRF_X9US.. PLUS**(alphaL9_US) * PKUS**(alphaK9_US) * PX6US**(alpha69_US) * PX3US**(alpha39_US)
        * PX8US**(1-alphaL9_US-alphaK9_US-alpha69_US-alpha39_US) =G= PX9US;
PRF_WUS.. PX0US**(phi0US) * PX1US**(phi1US) * PX2US**(phi2US) * PX3US**(phi3US) * PX5US**(phi5US)* PX6US**(phi6US)
        * PX7US**(phi7US) * PX8US**(phi8US) * PX9US**(1-phi0US-phi1US-phi2US-phi3US-phi5US-phi6US-phi7US-phi8US) =G= PWUS;

*   GOODS MARKET EQUILIBRIUM CONDITIONS

MKT_X0US..   X0US + X0DE_US + X0BE_US + X0NL_US + X0FR_US + X0UK_US + X0IT_US + X0CN_US + X0JP_US =G= WUS * phi0US * PWUS / PX0US
        + alpha01_US * X1US * PX1US / PX0US
        + X0US_DE
        + X0US_BE
        + X0US_NL
        + X0US_FR
        + X0US_UK
        + X0US_IT
        + X0US_CN
        + X0US_JP;
MKT_X1US..   X1US + X1DE_US + X1BE_US + X1NL_US + X1FR_US + X1UK_US + X1IT_US + X1CN_US + X1JP_US =G= WUS * phi1US * PWUS / PX1US
        + alpha10_US * X0US * PX0US / PX1US
        + X1US_DE
        + X1US_BE
        + X1US_NL
        + X1US_FR
        + X1US_UK
        + X1US_IT
        + X1US_CN
        + X1US_JP;
MKT_X2US..   X2US + X2DE_US + X2BE_US + X2NL_US + X2FR_US + X2UK_US + X2IT_US + X2CN_US + X2JP_US =G= WUS * phi2US * PWUS / PX2US
        + alpha23_US * X3US * PX3US / PX2US
        + (1-alphaL6_US-alphaK6_US-alpha96_US-alpha56_US) * X6US * PX6US / PX2US
        + X2US_DE
        + X2US_BE
        + X2US_NL
        + X2US_FR
        + X2US_UK
        + X2US_IT
        + X2US_CN
        + X2US_JP;
MKT_X3US..   X3US + X3DE_US + X3BE_US + X3NL_US + X3FR_US + X3UK_US + X3IT_US + X3CN_US + X3JP_US =G= WUS * phi3US * PWUS / PX3US
        + (1-alphaL0_US-alphaK0_US-alpha90_US-alpha10_US) * X0US * PX0US / PX3US
        + (1-alphaL5_US-alphaK5_US-alpha95_US-alpha65_US) * X5US * PX5US / PX3US
        + alpha39_US * X9US * PX9US / PX3US
        + X3US_DE
        + X3US_BE
        + X3US_NL
        + X3US_FR

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                    + X3US_UK
                    + X3US_IT
                    + X3US_CN
                    + X3US_JP;
MKT_X5US..   X5US + X5DE_US + X5BE_US + X5NL_US + X5FR_US + X5UK_US + X5IT_US + X5CN_US + X5JP_US =G= WUS * phi5US * PWUS / PX5US
                    + (1-alphaL3_US-alphaK3_US-alpha23_US-alpha93_US) * X3US * PX3US / PX5US
                    + alpha56_US * X6US * PX6US / PX5US
                    + (1-alphaL8_US-alphaK8_US-alpha98_US-alpha68_US) * X8US * PX8US / PX5US
                    + X5US_DE
                    + X5US_BE
                    + X5US_NL
                    + X5US_FR
                    + X5US_UK
                    + X5US_IT
                    + X5US_CN
                    + X5US_JP;
MKT_X6US..   X6US + X6DE_US + X6BE_US + X6NL_US + X6FR_US + X6UK_US + X6IT_US + X6CN_US + X6JP_US =G= WUS * phi6US * PWUS / PX6US
                    + (1-alphaL1_US-alphaK1_US-alpha91_US-alpha01_US) * X1US * PX1US / PX6US
                    + (1-alphaL2_US-alphaK2_US-alpha92_US-alpha72_US) * X2US * PX2US / PX6US
                    + alpha65_US * X5US * PX5US / PX6US
                    + alpha67_US * X7US * PX7US / PX6US
                    + alpha68_US * X8US * PX8US / PX6US
                    + alpha69_US * X9US * PX9US / PX6US
                    + X6US_DE
                    + X6US_BE
                    + X6US_NL
                    + X6US_FR
                    + X6US_UK
                    + X6US_IT
                    + X6US_CN
                    + X6US_JP;
MKT_X7US..   X7US + X7DE_US + X7BE_US + X7NL_US + X7FR_US + X7UK_US + X7IT_US + X7CN_US + X7JP_US =G= WUS * phi7US * PWUS / PX7US
                    + alpha72_US * X2US * PX2US / PX7US
                    + X7US_DE
                    + X7US_BE
                    + X7US_NL
                    + X7US_FR
                    + X7US_UK
                    + X7US_IT
                    + X7US_CN
                    + X7US_JP;
MKT_X8US..   X8US + X8DE_US + X8BE_US + X8NL_US + X8FR_US + X8UK_US + X8IT_US + X8CN_US + X8JP_US =G= WUS * phi8US * PWUS / PX8US
                    + (1-alphaL7_US-alphaK7_US-alpha97_US-alpha67_US) * X7US * PX7US / PX8US
                    + (1-alphaL9_US-alphaK9_US-alpha69_US-alpha39_US) * X9US * PX9US / PX8US
                    + X8US_DE
                    + X8US_BE
                    + X8US_NL
                    + X8US_FR
                    + X8US_UK
                    + X8US_IT
                    + X8US_CN
                    + X8US_JP;
MKT_X9US..   X9US + X9DE_US + X9BE_US + X9NL_US + X9FR_US + X9UK_US + X9IT_US + X9CN_US + X9JP_US =G= WUS * (1-phi0US-phi1US-
phi2US-phi3US-phi5US-phi6US-phi7US-phi8US) * PWUS / PX9US
                    + alpha90_US * X0US * PX0US / PX9US
                    + alpha91_US * X1US * PX1US / PX9US
                    + alpha92_US * X2US * PX2US / PX9US
                    + alpha93_US * X3US * PX3US / PX9US
                    + alpha95_US * X5US * PX5US / PX9US
                    + alpha96_US * X6US * PX6US / PX9US
                    + alpha97_US * X7US * PX7US / PX9US
                    + alpha98_US * X8US * PX8US / PX9US
                    + X9US_DE
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                    + X9US_BE
                    + X9US_NL
                    + X9US_FR
                    + X9US_UK
                    + X9US_IT
                    + X9US_CN
                    + X9US_JP;
MKT_WUS..     WUS * PWUS =E= CONSUS / 1;


*              FACTOR MARKET EQUILIBRIUM CONDITIONS

MKT_LUS..     LUS =G=  alphaL0_US * X0US * PX0US / PLUS + alphaL1_US * X1US * PX1US / PLUS + alphaL2_US * X2US * PX2US / PLUS +
alphaL3_US * X3US * PX3US / PLUS
               + alphaL5_US * X5US * PX5US / PLUS + alphaL6_US * X6US * PX6US / PLUS + alphaL7_US * X7US * PX7US / PLUS + alphaL8_US *
X8US * PX8US / PLUS
               + alphaL9_US * X9US * PX9US / PLUS;
MKT_KUS..     KUS =G=  (alphaK0_US) * X0US * PX0US / PKUS + (alphaK1_US) * X1US * PX1US / PKUS + (alphaK2_US) * X2US * PX2US / PKUS
               + (alphaK3_US) * X3US * PX3US / PKUS + (alphaK5_US) * X5US * PX5US / PKUS + (alphaK6_US) * X6US * PX6US / PKUS
               + (alphaK7_US) * X7US * PX7US / PKUS + (alphaK8_US) * X8US * PX8US / PKUS + (alphaK9_US) * X9US * PX9US / PKUS;


*              DEFINITION OF INCOME

I_CONSUS..    CONSUS =E= LUS*PLUS + KUS*PKUS
               + TX0US * PX0NL * X0NL_US + TX1US * PX1NL * X1NL_US + TX2US * PX2NL * X2NL_US + TX3US * PX3NL * X3NL_US
               + TX5US * PX5NL * X5NL_US + TX6US * PX6NL * X6NL_US + TX7US * PX7NL * X7NL_US + TX8US * PX8NL * X8NL_US
               + TX9US * PX9NL * X9NL_US
               + TX0US * PX0DE * X0DE_US + TX1US * PX1DE * X1DE_US + TX2US * PX2DE * X2DE_US + TX3US * PX3DE * X3DE_US
               + TX5US * PX5DE * X5DE_US + TX6US * PX6DE * X6DE_US + TX7US * PX7DE * X7DE_US + TX8US * PX8DE * X8DE_US
               + TX9US * PX9DE * X9DE_US
               + TX0US * PX0BE * X0BE_US + TX1US * PX1BE * X1BE_US + TX2US * PX2BE * X2BE_US + TX3US * PX3BE * X3BE_US
               + TX5US * PX5BE * X5BE_US + TX6US * PX6BE * X6BE_US + TX7US * PX7BE * X7BE_US + TX8US * PX8BE * X8BE_US
               + TX9US * PX9BE * X9BE_US
               + TX0US * PX0FR * X0FR_US + TX1US * PX1FR * X1FR_US + TX2US * PX2FR * X2FR_US + TX3US * PX3FR * X3FR_US
               + TX5US * PX5FR * X5FR_US + TX6US * PX6FR * X6FR_US + TX7US * PX7FR * X7FR_US + TX8US * PX8FR * X8FR_US
               + TX9US * PX9FR * X9FR_US
               + TX0US * PX0UK * X0UK_US + TX1US * PX1UK * X1UK_US + TX2US * PX2UK * X2UK_US + TX3US * PX3UK * X3UK_US
               + TX5US * PX5UK * X5UK_US + TX6US * PX6UK * X6UK_US + TX7US * PX7UK * X7UK_US + TX8US * PX8UK * X8UK_US
               + TX9US * PX9UK * X9UK_US
               + TX0US * PX0IT * X0IT_US + TX1US * PX1IT * X1IT_US + TX2US * PX2IT * X2IT_US + TX3US * PX3IT * X3IT_US
               + TX5US * PX5IT * X5IT_US + TX6US * PX6IT * X6IT_US + TX7US * PX7IT * X7IT_US + TX8US * PX8IT * X8IT_US
               + TX9US * PX9IT * X9IT_US
               + TX0US * PX0CN * X0CN_US + TX1US * PX1CN * X1CN_US + TX2US * PX2CN * X2CN_US + TX3US * PX3CN * X3CN_US
               + TX5US * PX5CN * X5CN_US + TX6US * PX6CN * X6CN_US + TX7US * PX7CN * X7CN_US + TX8US * PX8CN * X8CN_US
               + TX9US * PX9CN * X9CN_US
               + TX0US * PX0JP * X0JP_US + TX1US * PX1JP * X1JP_US + TX2US * PX2JP * X2JP_US + TX3US * PX3JP * X3JP_US
               + TX5US * PX5JP * X5JP_US + TX6US * PX6JP * X6JP_US + TX7US * PX7JP * X7JP_US + TX8US * PX8JP * X8JP_US
               + TX9US * PX9JP * X9JP_US;


*              ADDITIONAL EQUATIONS DETERMINING NET EXPORTS PER GOOD (USED FOR CALCULATING MODEL ACCURACY)

I_TOT_IMP_0_US.. TOT_IMP_0_US =E= X0NL_US + X0DE_US + X0BE_US + X0FR_US + X0UK_US + X0IT_US + X0CN_US + X0JP_US;
I_TOT_EXP_0_US.. TOT_EXP_0_US =E= X0US_NL + X0US_DE + X0US_BE + X0US_FR + X0US_UK + X0US_IT + X0US_CN + X0US_JP;
I_NET_EXP_0_US.. NET_EXP_0_US =E= TOT_EXP_0_US - TOT_IMP_0_US;
I_TOT_IMP_1_US.. TOT_IMP_1_US =E= X1NL_US + X1DE_US + X1BE_US + X1FR_US + X1UK_US + X1IT_US + X1CN_US + X1JP_US;
I_TOT_EXP_1_US.. TOT_EXP_1_US =E= X1US_NL + X1US_DE + X1US_BE + X1US_FR + X1US_UK + X1US_IT + X1US_CN + X1US_JP;
I_NET_EXP_1_US.. NET_EXP_1_US =E= TOT_EXP_1_US - TOT_IMP_1_US;
I_TOT_IMP_2_US.. TOT_IMP_2_US =E= X2NL_US + X2DE_US + X2BE_US + X2FR_US + X2UK_US + X2IT_US + X2CN_US + X2JP_US;
I_TOT_EXP_2_US.. TOT_EXP_2_US =E= X2US_NL + X2US_DE + X2US_BE + X2US_FR + X2US_UK + X2US_IT + X2US_CN + X2US_JP;
I_NET_EXP_2_US.. NET_EXP_2_US =E= TOT_EXP_2_US - TOT_IMP_2_US;
I_TOT_IMP_3_US.. TOT_IMP_3_US =E= X3NL_US + X3DE_US + X3BE_US + X3FR_US + X3UK_US + X3IT_US + X3CN_US + X3JP_US;
I_TOT_EXP_3_US.. TOT_EXP_3_US =E= X3US_NL + X3US_DE + X3US_BE + X3US_FR + X3US_UK + X3US_IT + X3US_CN + X3US_JP;
I_NET_EXP_3_US.. NET_EXP_3_US =E= TOT_EXP_3_US - TOT_IMP_3_US;
I_TOT_IMP_5_US.. TOT_IMP_5_US =E= X5NL_US + X5DE_US + X5BE_US + X5FR_US + X5UK_US + X5IT_US + X5CN_US + X5JP_US;
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I_TOT_EXP_5_US.. TOT_EXP_5_US =E= X5US_NL + X5US_DE + X5US_BE + X5US_FR + X5US_UK + X5US_IT + X5US_CN + X5US_JP;
I_NET_EXP_5_US.. NET_EXP_5_US =E= TOT_EXP_5_US - TOT_IMP_5_US;
I_TOT_IMP_6_US.. TOT_IMP_6_US =E= X6NL_US + X6DE_US + X6BE_US + X6FR_US + X6UK_US + X6IT_US + X6CN_US + X6JP_US;
I_TOT_EXP_6_US.. TOT_EXP_6_US =E= X6US_NL + X6US_DE + X6US_BE + X6US_FR + X6US_UK + X6US_IT + X6US_CN + X6US_JP;
I_NET_EXP_6_US.. NET_EXP_6_US =E= TOT_EXP_6_US - TOT_IMP_6_US;
I_TOT_IMP_7_US.. TOT_IMP_7_US =E= X7NL_US + X7DE_US + X7BE_US + X7FR_US + X7UK_US + X7IT_US + X7CN_US + X7JP_US;
I_TOT_EXP_7_US.. TOT_EXP_7_US =E= X7US_NL + X7US_DE + X7US_BE + X7US_FR + X7US_UK + X7US_IT + X7US_CN + X7US_JP;
I_NET_EXP_7_US.. NET_EXP_7_US =E= TOT_EXP_7_US - TOT_IMP_7_US;
I_TOT_IMP_8_US.. TOT_IMP_8_US =E= X8NL_US + X8DE_US + X8BE_US + X8FR_US + X8UK_US + X8IT_US + X8CN_US + X8JP_US;
I_TOT_EXP_8_US.. TOT_EXP_8_US =E= X8US_NL + X8US_DE + X8US_BE + X8US_FR + X8US_UK + X8US_IT + X8US_CN + X8US_JP;
I_NET_EXP_8_US.. NET_EXP_8_US =E= TOT_EXP_8_US - TOT_IMP_8_US;
I_TOT_IMP_9_US.. TOT_IMP_9_US =E= X9NL_US + X9DE_US + X9BE_US + X9FR_US + X9UK_US + X9IT_US + X9CN_US + X9JP_US;
I_TOT_EXP_9_US.. TOT_EXP_9_US =E= X9US_NL + X9US_DE + X9US_BE + X9US_FR + X9US_UK + X9US_IT + X9US_CN + X9US_JP;
I_NET_EXP_9_US.. NET_EXP_9_US =E= TOT_EXP_9_US - TOT_IMP_9_US;
I_TARIFF_INC_US.. TARIFF_INC_US =E= TX0US * PX0NL * X0NL_US + TX1US * PX1NL * X1NL_US + TX2US * PX2NL * X2NL_US + TX3US * PX3NL * X3NL_US

            + TX5US * PX5NL * X5NL_US + TX6US * PX6NL * X6NL_US + TX7US * PX7NL * X7NL_US + TX8US * PX8NL * X8NL_US
            + TX9US * PX9NL * X9NL_US
            + TX0US * PX0DE * X0DE_US + TX1US * PX1DE * X1DE_US + TX2US * PX2DE * X2DE_US + TX3US * PX3DE * X3DE_US
            + TX5US * PX5DE * X5DE_US + TX6US * PX6DE * X6DE_US + TX7US * PX7DE * X7DE_US + TX8US * PX8DE * X8DE_US
            + TX9US * PX9DE * X9DE_US
            + TX0US * PX0BE * X0BE_US + TX1US * PX1BE * X1BE_US + TX2US * PX2BE * X2BE_US + TX3US * PX3BE * X3BE_US
            + TX5US * PX5BE * X5BE_US + TX6US * PX6BE * X6BE_US + TX7US * PX7BE * X7BE_US + TX8US * PX8BE * X8BE_US
            + TX9US * PX9BE * X9BE_US
            + TX0US * PX0FR * X0FR_US + TX1US * PX1FR * X1FR_US + TX2US * PX2FR * X2FR_US + TX3US * PX3FR * X3FR_US
            + TX5US * PX5FR * X5FR_US + TX6US * PX6FR * X6FR_US + TX7US * PX7FR * X7FR_US + TX8US * PX8FR * X8FR_US
            + TX9US * PX9FR * X9FR_US
            + TX0US * PX0UK * X0UK_US + TX1US * PX1UK * X1UK_US + TX2US * PX2UK * X2UK_US + TX3US * PX3UK * X3UK_US
            + TX5US * PX5UK * X5UK_US + TX6US * PX6UK * X6UK_US + TX7US * PX7UK * X7UK_US + TX8US * PX8UK * X8UK_US
            + TX9US * PX9UK * X9UK_US
            + TX0US * PX0IT * X0IT_US + TX1US * PX1IT * X1IT_US + TX2US * PX2IT * X2IT_US + TX3US * PX3IT * X3IT_US
            + TX5US * PX5IT * X5IT_US + TX6US * PX6IT * X6IT_US + TX7US * PX7IT * X7IT_US + TX8US * PX8IT * X8IT_US
            + TX9US * PX9IT * X9IT_US
            + TX0US * PX0CN * X0CN_US + TX1US * PX1CN * X1CN_US + TX2US * PX2CN * X2CN_US + TX3US * PX3CN * X3CN_US
            + TX5US * PX5CN * X5CN_US + TX6US * PX6CN * X6CN_US + TX7US * PX7CN * X7CN_US + TX8US * PX8CN * X8CN_US
            + TX9US * PX9CN * X9CN_US
            + TX0US * PX0JP * X0JP_US + TX1US * PX1JP * X1JP_US + TX2US * PX2JP * X2JP_US + TX3US * PX3JP * X3JP_US
            + TX5US * PX5JP * X5JP_US + TX6US * PX6JP * X6JP_US + TX7US * PX7JP * X7JP_US + TX8US * PX8JP * X8JP_US
            + TX9US * PX9JP * X9JP_US;

*   ALL COUNTRIES

*   ZERO PROFIT CONDITIONS OF IMPORTS

PX0NL_DE..   PX0NL =G= PX0DE;   PX0BE_UK..   PX0BE =G= PX0UK;
PX0DE_NL..   PX0DE =G= PX0NL;   PX0UK_BE..   PX0UK =G= PX0BE;
                                                     PX0FR_UK..   PX0FR =G= PX0UK;
PX0NL_BE..   PX0NL =G= PX0BE;   PX0UK_FR..   PX0UK =G= PX0FR;
PX0BE_NL..   PX0BE =G= PX0NL;
PX0BE_DE..   PX0BE =G= PX0DE;   PX0NL_IT..   PX0NL =G= PX0IT;
PX0DE_BE..   PX0DE =G= PX0BE;   PX0IT_NL..   PX0IT =G= PX0NL;
                                                     PX0DE_IT..   PX0DE =G= PX0IT;
PX0NL_FR..   PX0NL =G= PX0FR;   PX0IT_DE..   PX0IT =G= PX0DE;
PX0FR_NL..   PX0FR =G= PX0NL;   PX0BE_IT..   PX0BE =G= PX0IT;
PX0FR_BE..   PX0FR =G= PX0BE;   PX0IT_BE..   PX0IT =G= PX0BE;
PX0BE_FR..   PX0BE =G= PX0FR;   PX0FR_IT..   PX0FR =G= PX0IT;
PX0FR_DE..   PX0FR =G= PX0DE;   PX0IT_FR..   PX0IT =G= PX0FR;
PX0DE_FR..   PX0DE =G= PX0FR;   PX0UK_IT..   PX0UK =G= PX0IT;
                                                     PX0IT_UK..   PX0IT =G= PX0UK;
PX0NL_UK..   PX0NL =G= PX0UK;
PX0UK_NL..   PX0UK =G= PX0NL;   PX0NL_CN..   PX0NL * (1 + TX0CN) =G= PX0CN;
PX0DE_UK..   PX0DE =G= PX0UK;   PX0CN_NL..   PX0CN * (1 + TX0NL) =G= PX0NL;
PX0UK_DE..   PX0UK =G= PX0DE;   PX0DE_CN..   PX0DE * (1 + TX0CN) =G= PX0CN;

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PX0CN_DE..   PX0CN * (1 + TX0DE) =G= PX0DE;
PX0BE_CN..   PX0BE * (1 + TX0CN) =G= PX0CN;
PX0CN_BE..   PX0CN * (1 + TX0BE) =G= PX0BE;
PX0FR_CN..   PX0FR * (1 + TX0CN) =G= PX0CN;
PX0CN_FR..   PX0CN * (1 + TX0FR) =G= PX0FR;
PX0UK_CN..   PX0UK * (1 + TX0CN) =G= PX0CN;
PX0CN_UK..   PX0CN * (1 + TX0UK) =G= PX0UK;
PX0IT_CN..   PX0IT * (1 + TX0CN) =G= PX0CN;
PX0CN_IT..   PX0CN * (1 + TX0IT) =G= PX0IT;

PX0NL_JP..   PX0NL * (1 + TX0JP) =G= PX0JP;
PX0JP_NL..   PX0JP * (1 + TX0NL) =G= PX0NL;
PX0DE_JP..   PX0DE * (1 + TX0JP) =G= PX0JP;
PX0JP_DE..   PX0JP * (1 + TX0DE) =G= PX0DE;
PX0BE_JP..   PX0BE * (1 + TX0JP) =G= PX0JP;
PX0JP_BE..   PX0JP * (1 + TX0BE) =G= PX0BE;
PX0FR_JP..   PX0FR * (1 + TX0JP) =G= PX0JP;
PX0JP_FR..   PX0JP * (1 + TX0FR) =G= PX0FR;
PX0UK_JP..   PX0UK * (1 + TX0JP) =G= PX0JP;
PX0JP_UK..   PX0JP * (1 + TX0UK) =G= PX0UK;
PX0IT_JP..   PX0IT * (1 + TX0JP) =G= PX0JP;
PX0JP_IT..   PX0JP * (1 + TX0IT) =G= PX0IT;
PX0CN_JP..   PX0CN * (1 + TX0JP) =G= PX0JP;
PX0JP_CN..   PX0JP * (1 + TX0CN) =G= PX0CN;

PX0NL_US..   PX0NL * (1 + TX0US) =G= PX0US;
PX0US_NL..   PX0US * (1 + TX0NL) =G= PX0NL;
PX0DE_US..   PX0DE * (1 + TX0US) =G= PX0US;
PX0US_DE..   PX0US * (1 + TX0DE) =G= PX0DE;
PX0BE_US..   PX0BE * (1 + TX0US) =G= PX0US;
PX0US_BE..   PX0US * (1 + TX0BE) =G= PX0BE;
PX0FR_US..   PX0FR * (1 + TX0US) =G= PX0US;
PX0US_FR..   PX0US * (1 + TX0FR) =G= PX0FR;
PX0UK_US..   PX0UK * (1 + TX0US) =G= PX0US;
PX0US_UK..   PX0US * (1 + TX0UK) =G= PX0UK;
PX0IT_US..   PX0IT * (1 + TX0US) =G= PX0US;
PX0US_IT..   PX0US * (1 + TX0IT) =G= PX0IT;
PX0CN_US..   PX0CN * (1 + TX0US) =G= PX0US;
PX0US_CN..   PX0US * (1 + TX0CN) =G= PX0CN;
PX0JP_US..   PX0JP * (1 + TX0US) =G= PX0US;
PX0US_JP..   PX0US * (1 + TX0JP) =G= PX0JP;

PX1NL_DE..   PX1NL =G= PX1DE;
PX1DE_NL..   PX1DE =G= PX1NL;

PX1NL_BE..   PX1NL =G= PX1BE;
PX1BE_NL..   PX1BE =G= PX1NL;
PX1BE_DE..   PX1BE =G= PX1DE;
PX1DE_BE..   PX1DE =G= PX1BE;

PX1NL_FR..   PX1NL =G= PX1FR;
PX1FR_NL..   PX1FR =G= PX1NL;
PX1FR_BE..   PX1FR =G= PX1BE;
PX1BE_FR..   PX1BE =G= PX1FR;
PX1FR_DE..   PX1FR =G= PX1DE;
PX1DE_FR..   PX1DE =G= PX1FR;

PX1NL_UK..   PX1NL =G= PX1UK;
PX1UK_NL..   PX1UK =G= PX1NL;
PX1DE_UK..   PX1DE =G= PX1UK;
PX1UK_DE..   PX1UK =G= PX1DE;
PX1BE_UK..   PX1BE =G= PX1UK;
PX1UK_BE..   PX1UK =G= PX1BE;

PX1FR_UK..   PX1FR =G= PX1UK;
PX1UK_FR..   PX1UK =G= PX1FR;

PX1NL_IT..   PX1NL =G= PX1IT;
PX1IT_NL..   PX1IT =G= PX1NL;
PX1DE_IT..   PX1DE =G= PX1IT;
PX1IT_DE..   PX1IT =G= PX1DE;
PX1BE_IT..   PX1BE =G= PX1IT;
PX1IT_BE..   PX1IT =G= PX1BE;
PX1FR_IT..   PX1FR =G= PX1IT;
PX1IT_FR..   PX1IT =G= PX1FR;
PX1UK_IT..   PX1UK =G= PX1IT;
PX1IT_UK..   PX1IT =G= PX1UK;

PX1NL_CN..   PX1NL * (1 + TX1CN) =G= PX1CN;
PX1CN_NL..   PX1CN * (1 + TX1NL) =G= PX1NL;
PX1DE_CN..   PX1DE * (1 + TX1CN) =G= PX1CN;
PX1CN_DE..   PX1CN * (1 + TX1DE) =G= PX1DE;
PX1BE_CN..   PX1BE * (1 + TX1CN) =G= PX1CN;
PX1CN_BE..   PX1CN * (1 + TX1BE) =G= PX1BE;
PX1FR_CN..   PX1FR * (1 + TX1CN) =G= PX1CN;
PX1CN_FR..   PX1CN * (1 + TX1FR) =G= PX1FR;
PX1UK_CN..   PX1UK * (1 + TX1CN) =G= PX1CN;
PX1CN_UK..   PX1CN * (1 + TX1UK) =G= PX1UK;
PX1IT_CN..   PX1IT * (1 + TX1CN) =G= PX1CN;
PX1CN_IT..   PX1CN * (1 + TX1IT) =G= PX1IT;

PX1NL_JP..   PX1NL * (1 + TX1JP) =G= PX1JP;
PX1JP_NL..   PX1JP * (1 + TX1NL) =G= PX1NL;
PX1DE_JP..   PX1DE * (1 + TX1JP) =G= PX1JP;
PX1JP_DE..   PX1JP * (1 + TX1DE) =G= PX1DE;
PX1BE_JP..   PX1BE * (1 + TX1JP) =G= PX1JP;
PX1JP_BE..   PX1JP * (1 + TX1BE) =G= PX1BE;
PX1FR_JP..   PX1FR * (1 + TX1JP) =G= PX1JP;
PX1JP_FR..   PX1JP * (1 + TX1FR) =G= PX1FR;
PX1UK_JP..   PX1UK * (1 + TX1JP) =G= PX1JP;
PX1JP_UK..   PX1JP * (1 + TX1UK) =G= PX1UK;
PX1IT_JP..   PX1IT * (1 + TX1JP) =G= PX1JP;
PX1JP_IT..   PX1JP * (1 + TX1IT) =G= PX1IT;
PX1CN_JP..   PX1CN * (1 + TX1JP) =G= PX1JP;
PX1JP_CN..   PX1JP * (1 + TX1CN) =G= PX1CN;

PX1NL_US..   PX1NL * (1 + TX1US) =G= PX1US;
PX1US_NL..   PX1US * (1 + TX1NL) =G= PX1NL;
PX1DE_US..   PX1DE * (1 + TX1US) =G= PX1US;
PX1US_DE..   PX1US * (1 + TX1DE) =G= PX1DE;
PX1BE_US..   PX1BE * (1 + TX1US) =G= PX1US;
PX1US_BE..   PX1US * (1 + TX1BE) =G= PX1BE;
PX1FR_US..   PX1FR * (1 + TX1US) =G= PX1US;
PX1US_FR..   PX1US * (1 + TX1FR) =G= PX1FR;
PX1UK_US..   PX1UK * (1 + TX1US) =G= PX1US;
PX1US_UK..   PX1US * (1 + TX1UK) =G= PX1UK;
PX1IT_US..   PX1IT * (1 + TX1US) =G= PX1US;
PX1US_IT..   PX1US * (1 + TX1IT) =G= PX1IT;
PX1CN_US..   PX1CN * (1 + TX1US) =G= PX1US;
PX1US_CN..   PX1US * (1 + TX1CN) =G= PX1CN;
PX1JP_US..   PX1JP * (1 + TX1US) =G= PX1US;
PX1US_JP..   PX1US * (1 + TX1JP) =G= PX1JP;

PX2NL_DE..   PX2NL =G= PX2DE;
PX2DE_NL..   PX2DE =G= PX2NL;

PX2NL_BE..   PX2NL =G= PX2BE;
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PX2BE_NL..    PX2BE =G= PX2NL;
PX2BE_DE..    PX2BE =G= PX2DE;
PX2DE_BE..    PX2DE =G= PX2BE;


PX2NL_FR..    PX2NL =G= PX2FR;
PX2FR_NL..    PX2FR =G= PX2NL;
PX2FR_BE..    PX2FR =G= PX2BE;
PX2BE_FR..    PX2BE =G= PX2FR;
PX2FR_DE..    PX2FR =G= PX2DE;
PX2DE_FR..    PX2DE =G= PX2FR;


PX2NL_UK..    PX2NL =G= PX2UK;
PX2UK_NL..    PX2UK =G= PX2NL;
PX2DE_UK..    PX2DE =G= PX2UK;
PX2UK_DE..    PX2UK =G= PX2DE;
PX2BE_UK..    PX2BE =G= PX2UK;
PX2UK_BE..    PX2UK =G= PX2BE;
PX2FR_UK..    PX2FR =G= PX2UK;
PX2UK_FR..    PX2UK =G= PX2FR;


PX2NL_IT..    PX2NL =G= PX2IT;
PX2IT_NL..    PX2IT =G= PX2NL;
PX2DE_IT..    PX2DE =G= PX2IT;
PX2IT_DE..    PX2IT =G= PX2DE;
PX2BE_IT..    PX2BE =G= PX2IT;
PX2IT_BE..    PX2IT =G= PX2BE;
PX2FR_IT..    PX2FR =G= PX2IT;
PX2IT_FR..    PX2IT =G= PX2FR;
PX2UK_IT..    PX2UK =G= PX2IT;
PX2IT_UK..    PX2IT =G= PX2UK;


PX2NL_CN..    PX2NL * (1 + TX2CN) =G= PX2CN;
PX2CN_NL..    PX2CN * (1 + TX2NL) =G= PX2NL;
PX2DE_CN..    PX2DE * (1 + TX2CN) =G= PX2CN;
PX2CN_DE..    PX2CN * (1 + TX2DE) =G= PX2DE;
PX2BE_CN..    PX2BE * (1 + TX2CN) =G= PX2CN;
PX2CN_BE..    PX2CN * (1 + TX2BE) =G= PX2BE;
PX2FR_CN..    PX2FR * (1 + TX2CN) =G= PX2CN;
PX2CN_FR..    PX2CN * (1 + TX2FR) =G= PX2FR;
PX2UK_CN..    PX2UK * (1 + TX2CN) =G= PX2CN;
PX2CN_UK..    PX2CN * (1 + TX2UK) =G= PX2UK;
PX2IT_CN..    PX2IT * (1 + TX2CN) =G= PX2CN;
PX2CN_IT..    PX2CN * (1 + TX2IT) =G= PX2IT;


PX2NL_JP..    PX2NL * (1 + TX2JP) =G= PX2JP;
PX2JP_NL..    PX2JP * (1 + TX2NL) =G= PX2NL;
PX2DE_JP..    PX2DE * (1 + TX2JP) =G= PX2JP;
PX2JP_DE..    PX2JP * (1 + TX2DE) =G= PX2DE;
PX2BE_JP..    PX2BE * (1 + TX2JP) =G= PX2JP;
PX2JP_BE..    PX2JP * (1 + TX2BE) =G= PX2BE;
PX2FR_JP..    PX2FR * (1 + TX2JP) =G= PX2JP;
PX2JP_FR..    PX2JP * (1 + TX2FR) =G= PX2FR;
PX2UK_JP..    PX2UK * (1 + TX2JP) =G= PX2JP;
PX2JP_UK..    PX2JP * (1 + TX2UK) =G= PX2UK;
PX2IT_JP..    PX2IT * (1 + TX2JP) =G= PX2JP;
PX2JP_IT..    PX2JP * (1 + TX2IT) =G= PX2IT;
PX2CN_JP..    PX2CN * (1 + TX2JP) =G= PX2JP;
PX2JP_CN..    PX2JP * (1 + TX2CN) =G= PX2CN;


PX2NL_US..    PX2NL * (1 + TX2US) =G= PX2US;
PX2US_NL..    PX2US * (1 + TX2NL) =G= PX2NL;
PX2DE_US..    PX2DE * (1 + TX2US) =G= PX2US;
PX2US_DE..    PX2US * (1 + TX2DE) =G= PX2DE;


PX2BE_US..    PX2BE * (1 + TX2US) =G= PX2US;
PX2US_BE..    PX2US * (1 + TX2BE) =G= PX2BE;
PX2FR_US..    PX2FR * (1 + TX2US) =G= PX2US;
PX2US_FR..    PX2US * (1 + TX2FR) =G= PX2FR;
PX2UK_US..    PX2UK * (1 + TX2US) =G= PX2US;
PX2US_UK..    PX2US * (1 + TX2UK) =G= PX2UK;
PX2IT_US..    PX2IT * (1 + TX2US) =G= PX2US;
PX2US_IT..    PX2US * (1 + TX2IT) =G= PX2IT;
PX2CN_US..    PX2CN * (1 + TX2US) =G= PX2US;
PX2US_CN..    PX2US * (1 + TX2CN) =G= PX2CN;
PX2JP_US..    PX2JP * (1 + TX2US) =G= PX2US;
PX2US_JP..    PX2US * (1 + TX2JP) =G= PX2JP;


PX3NL_DE..    PX3NL =G= PX3DE;
PX3DE_NL..    PX3DE =G= PX3NL;


PX3NL_BE..    PX3NL =G= PX3BE;
PX3BE_NL..    PX3BE =G= PX3NL;
PX3BE_DE..    PX3BE =G= PX3DE;
PX3DE_BE..    PX3DE =G= PX3BE;


PX3NL_FR..    PX3NL =G= PX3FR;
PX3FR_NL..    PX3FR =G= PX3NL;
PX3FR_BE..    PX3FR =G= PX3BE;
PX3BE_FR..    PX3BE =G= PX3FR;
PX3FR_DE..    PX3FR =G= PX3DE;
PX3DE_FR..    PX3DE =G= PX3FR;


PX3NL_UK..    PX3NL =G= PX3UK;
PX3UK_NL..    PX3UK =G= PX3NL;
PX3DE_UK..    PX3DE =G= PX3UK;
PX3UK_DE..    PX3UK =G= PX3DE;
PX3BE_UK..    PX3BE =G= PX3UK;
PX3UK_BE..    PX3UK =G= PX3BE;
PX3FR_UK..    PX3FR =G= PX3UK;
PX3UK_FR..    PX3UK =G= PX3FR;


PX3NL_IT..    PX3NL =G= PX3IT;
PX3IT_NL..    PX3IT =G= PX3NL;
PX3DE_IT..    PX3DE =G= PX3IT;
PX3IT_DE..    PX3IT =G= PX3DE;
PX3BE_IT..    PX3BE =G= PX3IT;
PX3IT_BE..    PX3IT =G= PX3BE;
PX3FR_IT..    PX3FR =G= PX3IT;
PX3IT_FR..    PX3IT =G= PX3FR;
PX3UK_IT..    PX3UK =G= PX3IT;
PX3IT_UK..    PX3IT =G= PX3UK;


PX3NL_CN..    PX3NL * (1 + TX3CN) =G= PX3CN;
PX3CN_NL..    PX3CN * (1 + TX3NL) =G= PX3NL;
PX3DE_CN..    PX3DE * (1 + TX3CN) =G= PX3CN;
PX3CN_DE..    PX3CN * (1 + TX3DE) =G= PX3DE;
PX3BE_CN..    PX3BE * (1 + TX3CN) =G= PX3CN;
PX3CN_BE..    PX3CN * (1 + TX3BE) =G= PX3BE;
PX3FR_CN..    PX3FR * (1 + TX3CN) =G= PX3CN;
PX3CN_FR..    PX3CN * (1 + TX3FR) =G= PX3FR;
PX3UK_CN..    PX3UK * (1 + TX3CN) =G= PX3CN;
PX3CN_UK..    PX3CN * (1 + TX3UK) =G= PX3UK;
PX3IT_CN..    PX3IT * (1 + TX3CN) =G= PX3CN;
PX3CN_IT..    PX3CN * (1 + TX3IT) =G= PX3IT;


PX3NL_JP..    PX3NL * (1 + TX3JP) =G= PX3JP;
PX3JP_NL..    PX3JP * (1 + TX3NL) =G= PX3NL;
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PX3DE_JP..   PX3DE * (1 + TX3JP) =G= PX3JP;
PX3JP_DE..   PX3JP * (1 + TX3DE) =G= PX3DE;
PX3BE_JP..   PX3BE * (1 + TX3JP) =G= PX3JP;
PX3JP_BE..   PX3JP * (1 + TX3BE) =G= PX3BE;
PX3FR_JP..   PX3FR * (1 + TX3JP) =G= PX3JP;
PX3JP_FR..   PX3JP * (1 + TX3FR) =G= PX3FR;
PX3UK_JP..   PX3UK * (1 + TX3JP) =G= PX3JP;
PX3JP_UK..   PX3JP * (1 + TX3UK) =G= PX3UK;
PX3IT_JP..   PX3IT * (1 + TX3JP) =G= PX3JP;
PX3JP_IT..   PX3JP * (1 + TX3IT) =G= PX3IT;
PX3CN_JP..   PX3CN * (1 + TX3JP) =G= PX3JP;
PX3JP_CN..   PX3JP * (1 + TX3CN) =G= PX3CN;

PX3NL_US..   PX3NL * (1 + TX3US) =G= PX3US;
PX3US_NL..   PX3US * (1 + TX3NL) =G= PX3NL;
PX3DE_US..   PX3DE * (1 + TX3US) =G= PX3US;
PX3US_DE..   PX3US * (1 + TX3DE) =G= PX3DE;
PX3BE_US..   PX3BE * (1 + TX3US) =G= PX3US;
PX3US_BE..   PX3US * (1 + TX3BE) =G= PX3BE;
PX3FR_US..   PX3FR * (1 + TX3US) =G= PX3US;
PX3US_FR..   PX3US * (1 + TX3FR) =G= PX3FR;
PX3UK_US..   PX3UK * (1 + TX3US) =G= PX3US;
PX3US_UK..   PX3US * (1 + TX3UK) =G= PX3UK;
PX3IT_US..   PX3IT * (1 + TX3US) =G= PX3US;
PX3US_IT..   PX3US * (1 + TX3IT) =G= PX3IT;
PX3CN_US..   PX3CN * (1 + TX3US) =G= PX3US;
PX3US_CN..   PX3US * (1 + TX3CN) =G= PX3CN;
PX3JP_US..   PX3JP * (1 + TX3US) =G= PX3US;
PX3US_JP..   PX3US * (1 + TX3JP) =G= PX3JP;

PX5NL_DE..   PX5NL =G= PX5DE;
PX5DE_NL..   PX5DE =G= PX5NL;

PX5NL_BE..   PX5NL =G= PX5BE;
PX5BE_NL..   PX5BE =G= PX5NL;
PX5BE_DE..   PX5BE =G= PX5DE;
PX5DE_BE..   PX5DE =G= PX5BE;

PX5NL_FR..   PX5NL =G= PX5FR;
PX5FR_NL..   PX5FR =G= PX5NL;
PX5FR_BE..   PX5FR =G= PX5BE;
PX5BE_FR..   PX5BE =G= PX5FR;
PX5FR_DE..   PX5FR =G= PX5DE;
PX5DE_FR..   PX5DE =G= PX5FR;

PX5NL_UK..   PX5NL =G= PX5UK;
PX5UK_NL..   PX5UK =G= PX5NL;
PX5DE_UK..   PX5DE =G= PX5UK;
PX5UK_DE..   PX5UK =G= PX5DE;
PX5BE_UK..   PX5BE =G= PX5UK;
PX5UK_BE..   PX5UK =G= PX5BE;
PX5FR_UK..   PX5FR =G= PX5UK;
PX5UK_FR..   PX5UK =G= PX5FR;

PX5NL_IT..   PX5NL =G= PX5IT;
PX5IT_NL..   PX5IT =G= PX5NL;
PX5DE_IT..   PX5DE =G= PX5IT;
PX5IT_DE..   PX5IT =G= PX5DE;
PX5BE_IT..   PX5BE =G= PX5IT;
PX5IT_BE..   PX5IT =G= PX5BE;
PX5FR_IT..   PX5FR =G= PX5IT;
PX5IT_FR..   PX5IT =G= PX5FR;
PX5UK_IT..   PX5UK =G= PX5IT;

PX5IT_UK..   PX5IT =G= PX5UK;

PX5NL_CN..   PX5NL * (1 + TX5CN) =G= PX5CN;
PX5CN_NL..   PX5CN * (1 + TX5NL) =G= PX5NL;
PX5DE_CN..   PX5DE * (1 + TX5CN) =G= PX5CN;
PX5CN_DE..   PX5CN * (1 + TX5DE) =G= PX5DE;
PX5BE_CN..   PX5BE * (1 + TX5CN) =G= PX5CN;
PX5CN_BE..   PX5CN * (1 + TX5BE) =G= PX5BE;
PX5FR_CN..   PX5FR * (1 + TX5CN) =G= PX5CN;
PX5CN_FR..   PX5CN * (1 + TX5FR) =G= PX5FR;
PX5UK_CN..   PX5UK * (1 + TX5CN) =G= PX5CN;
PX5CN_UK..   PX5CN * (1 + TX5UK) =G= PX5UK;
PX5IT_CN..   PX5IT * (1 + TX5CN) =G= PX5CN;
PX5CN_IT..   PX5CN * (1 + TX5IT) =G= PX5IT;

PX5NL_JP..   PX5NL * (1 + TX5JP) =G= PX5JP;
PX5JP_NL..   PX5JP * (1 + TX5NL) =G= PX5NL;
PX5DE_JP..   PX5DE * (1 + TX5JP) =G= PX5JP;
PX5JP_DE..   PX5JP * (1 + TX5DE) =G= PX5DE;
PX5BE_JP..   PX5BE * (1 + TX5JP) =G= PX5JP;
PX5JP_BE..   PX5JP * (1 + TX5BE) =G= PX5BE;
PX5FR_JP..   PX5FR * (1 + TX5JP) =G= PX5JP;
PX5JP_FR..   PX5JP * (1 + TX5FR) =G= PX5FR;
PX5UK_JP..   PX5UK * (1 + TX5JP) =G= PX5JP;
PX5JP_UK..   PX5JP * (1 + TX5UK) =G= PX5UK;
PX5IT_JP..   PX5IT * (1 + TX5JP) =G= PX5JP;
PX5JP_IT..   PX5JP * (1 + TX5IT) =G= PX5IT;
PX5CN_JP..   PX5CN * (1 + TX5JP) =G= PX5JP;
PX5JP_CN..   PX5JP * (1 + TX5CN) =G= PX5CN;

PX5NL_US..   PX5NL * (1 + TX5US) =G= PX5US;
PX5US_NL..   PX5US * (1 + TX5NL) =G= PX5NL;
PX5DE_US..   PX5DE * (1 + TX5US) =G= PX5US;
PX5US_DE..   PX5US * (1 + TX5DE) =G= PX5DE;
PX5BE_US..   PX5BE * (1 + TX5US) =G= PX5US;
PX5US_BE..   PX5US * (1 + TX5BE) =G= PX5BE;
PX5FR_US..   PX5FR * (1 + TX5US) =G= PX5US;
PX5US_FR..   PX5US * (1 + TX5FR) =G= PX5FR;
PX5UK_US..   PX5UK * (1 + TX5US) =G= PX5US;
PX5US_UK..   PX5US * (1 + TX5UK) =G= PX5UK;
PX5IT_US..   PX5IT * (1 + TX5US) =G= PX5US;
PX5US_IT..   PX5US * (1 + TX5IT) =G= PX5IT;
PX5CN_US..   PX5CN * (1 + TX5US) =G= PX5US;
PX5US_CN..   PX5US * (1 + TX5CN) =G= PX5CN;
PX5JP_US..   PX5JP * (1 + TX5US) =G= PX5US;
PX5US_JP..   PX5US * (1 + TX5JP) =G= PX5JP;

PX6NL_DE..   PX6NL =G= PX6DE;
PX6DE_NL..   PX6DE =G= PX6NL;

PX6NL_BE..   PX6NL =G= PX6BE;
PX6BE_NL..   PX6BE =G= PX6NL;
PX6BE_DE..   PX6BE =G= PX6DE;
PX6DE_BE..   PX6DE =G= PX6BE;

PX6NL_FR..   PX6NL =G= PX6FR;
PX6FR_NL..   PX6FR =G= PX6NL;
PX6FR_BE..   PX6FR =G= PX6BE;
PX6BE_FR..   PX6BE =G= PX6FR;
PX6FR_DE..   PX6FR =G= PX6DE;
PX6DE_FR..   PX6DE =G= PX6FR;

PX6NL_UK..   PX6NL =G= PX6UK;
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PX6UK_NL..    PX6UK =G= PX6NL;
PX6DE_UK..    PX6DE =G= PX6UK;
PX6UK_DE..    PX6UK =G= PX6DE;
PX6BE_UK..    PX6BE =G= PX6UK;
PX6UK_BE..    PX6UK =G= PX6BE;
PX6FR_UK..    PX6FR =G= PX6UK;
PX6UK_FR..    PX6UK =G= PX6FR;


PX6NL_IT..    PX6NL =G= PX6IT;
PX6IT_NL..    PX6IT =G= PX6NL;
PX6DE_IT..    PX6DE =G= PX6IT;
PX6IT_DE..    PX6IT =G= PX6DE;
PX6BE_IT..    PX6BE =G= PX6IT;
PX6IT_BE..    PX6IT =G= PX6BE;
PX6FR_IT..    PX6FR =G= PX6IT;
PX6IT_FR..    PX6IT =G= PX6FR;
PX6UK_IT..    PX6UK =G= PX6IT;
PX6IT_UK..    PX6IT =G= PX6UK;


PX6NL_CN..    PX6NL * (1 + TX6CN) =G= PX6CN;
PX6CN_NL..    PX6CN * (1 + TX6NL) =G= PX6NL;
PX6DE_CN..    PX6DE * (1 + TX6CN) =G= PX6CN;
PX6CN_DE..    PX6CN * (1 + TX6DE) =G= PX6DE;
PX6BE_CN..    PX6BE * (1 + TX6CN) =G= PX6CN;
PX6CN_BE..    PX6CN * (1 + TX6BE) =G= PX6BE;
PX6FR_CN..    PX6FR * (1 + TX6CN) =G= PX6CN;
PX6CN_FR..    PX6CN * (1 + TX6FR) =G= PX6FR;
PX6UK_CN..    PX6UK * (1 + TX6CN) =G= PX6CN;
PX6CN_UK..    PX6CN * (1 + TX6UK) =G= PX6UK;
PX6IT_CN..    PX6IT * (1 + TX6CN) =G= PX6CN;
PX6CN_IT..    PX6CN * (1 + TX6IT) =G= PX6IT;


PX6NL_JP..    PX6NL * (1 + TX6JP) =G= PX6JP;
PX6JP_NL..    PX6JP * (1 + TX6NL) =G= PX6NL;
PX6DE_JP..    PX6DE * (1 + TX6JP) =G= PX6JP;
PX6JP_DE..    PX6JP * (1 + TX6DE) =G= PX6DE;
PX6BE_JP..    PX6BE * (1 + TX6JP) =G= PX6JP;
PX6JP_BE..    PX6JP * (1 + TX6BE) =G= PX6BE;
PX6FR_JP..    PX6FR * (1 + TX6JP) =G= PX6JP;
PX6JP_FR..    PX6JP * (1 + TX6FR) =G= PX6FR;
PX6UK_JP..    PX6UK * (1 + TX6JP) =G= PX6JP;
PX6JP_UK..    PX6JP * (1 + TX6UK) =G= PX6UK;
PX6IT_JP..    PX6IT * (1 + TX6JP) =G= PX6JP;
PX6JP_IT..    PX6JP * (1 + TX6IT) =G= PX6IT;
PX6CN_JP..    PX6CN * (1 + TX6JP) =G= PX6JP;
PX6JP_CN..    PX6JP * (1 + TX6CN) =G= PX6CN;


PX6NL_US..    PX6NL * (1 + TX6US) =G= PX6US;
PX6US_NL..    PX6US * (1 + TX6NL) =G= PX6NL;
PX6DE_US..    PX6DE * (1 + TX6US) =G= PX6US;
PX6US_DE..    PX6US * (1 + TX6DE) =G= PX6DE;
PX6BE_US..    PX6BE * (1 + TX6US) =G= PX6US;
PX6US_BE..    PX6US * (1 + TX6BE) =G= PX6BE;
PX6FR_US..    PX6FR * (1 + TX6US) =G= PX6US;
PX6US_FR..    PX6US * (1 + TX6FR) =G= PX6FR;
PX6UK_US..    PX6UK * (1 + TX6US) =G= PX6US;
PX6US_UK..    PX6US * (1 + TX6UK) =G= PX6UK;
PX6IT_US..    PX6IT * (1 + TX6US) =G= PX6US;
PX6US_IT..    PX6US * (1 + TX6IT) =G= PX6IT;
PX6CN_US..    PX6CN * (1 + TX6US) =G= PX6US;
PX6US_CN..    PX6US * (1 + TX6CN) =G= PX6CN;
PX6JP_US..    PX6JP * (1 + TX6US) =G= PX6US;
PX6US_JP..    PX6US * (1 + TX6JP) =G= PX6JP;
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PX7NL_DE..    PX7NL =G= PX7DE;
PX7DE_NL..    PX7DE =G= PX7NL;


PX7NL_BE..    PX7NL =G= PX7BE;
PX7BE_NL..    PX7BE =G= PX7NL;
PX7BE_DE..    PX7BE =G= PX7DE;
PX7DE_BE..    PX7DE =G= PX7BE;


PX7NL_FR..    PX7NL =G= PX7FR;
PX7FR_NL..    PX7FR =G= PX7NL;
PX7FR_BE..    PX7FR =G= PX7BE;
PX7BE_FR..    PX7BE =G= PX7FR;
PX7FR_DE..    PX7FR =G= PX7DE;
PX7DE_FR..    PX7DE =G= PX7FR;


PX7NL_UK..    PX7NL =G= PX7UK;
PX7UK_NL..    PX7UK =G= PX7NL;
PX7DE_UK..    PX7DE =G= PX7UK;
PX7UK_DE..    PX7UK =G= PX7DE;
PX7BE_UK..    PX7BE =G= PX7UK;
PX7UK_BE..    PX7UK =G= PX7BE;
PX7FR_UK..    PX7FR =G= PX7UK;
PX7UK_FR..    PX7UK =G= PX7FR;


PX7NL_IT..    PX7NL =G= PX7IT;
PX7IT_NL..    PX7IT =G= PX7NL;
PX7DE_IT..    PX7DE =G= PX7IT;
PX7IT_DE..    PX7IT =G= PX7DE;
PX7BE_IT..    PX7BE =G= PX7IT;
PX7IT_BE..    PX7IT =G= PX7BE;
PX7FR_IT..    PX7FR =G= PX7IT;
PX7IT_FR..    PX7IT =G= PX7FR;
PX7UK_IT..    PX7UK =G= PX7IT;
PX7IT_UK..    PX7IT =G= PX7UK;


PX7NL_CN..    PX7NL * (1 + TX7CN) =G= PX7CN;
PX7CN_NL..    PX7CN * (1 + TX7NL) =G= PX7NL;
PX7DE_CN..    PX7DE * (1 + TX7CN) =G= PX7CN;
PX7CN_DE..    PX7CN * (1 + TX7DE) =G= PX7DE;
PX7BE_CN..    PX7BE * (1 + TX7CN) =G= PX7CN;
PX7CN_BE..    PX7CN * (1 + TX7BE) =G= PX7BE;
PX7FR_CN..    PX7FR * (1 + TX7CN) =G= PX7CN;
PX7CN_FR..    PX7CN * (1 + TX7FR) =G= PX7FR;
PX7UK_CN..    PX7UK * (1 + TX7CN) =G= PX7CN;
PX7CN_UK..    PX7CN * (1 + TX7UK) =G= PX7UK;
PX7IT_CN..    PX7IT * (1 + TX7CN) =G= PX7CN;
PX7CN_IT..    PX7CN * (1 + TX7IT) =G= PX7IT;


PX7NL_JP..    PX7NL * (1 + TX7JP) =G= PX7JP;
PX7JP_NL..    PX7JP * (1 + TX7NL) =G= PX7NL;
PX7DE_JP..    PX7DE * (1 + TX7JP) =G= PX7JP;
PX7JP_DE..    PX7JP * (1 + TX7DE) =G= PX7DE;
PX7BE_JP..    PX7BE * (1 + TX7JP) =G= PX7JP;
PX7JP_BE..    PX7JP * (1 + TX7BE) =G= PX7BE;
PX7FR_JP..    PX7FR * (1 + TX7JP) =G= PX7JP;
PX7JP_FR..    PX7JP * (1 + TX7FR) =G= PX7FR;
PX7UK_JP..    PX7UK * (1 + TX7JP) =G= PX7JP;
PX7JP_UK..    PX7JP * (1 + TX7UK) =G= PX7UK;
PX7IT_JP..    PX7IT * (1 + TX7JP) =G= PX7JP;
PX7JP_IT..    PX7JP * (1 + TX7IT) =G= PX7IT;
PX7CN_JP..    PX7CN * (1 + TX7JP) =G= PX7JP;
PX7JP_CN..    PX7JP * (1 + TX7CN) =G= PX7CN;
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PX7NL_US.. PX7NL * (1 + TX7US) =G= PX7US;
PX7US_NL.. PX7US * (1 + TX7NL) =G= PX7NL;
PX7DE_US.. PX7DE * (1 + TX7US) =G= PX7US;
PX7US_DE.. PX7US * (1 + TX7DE) =G= PX7DE;
PX7BE_US.. PX7BE * (1 + TX7US) =G= PX7US;
PX7US_BE.. PX7US * (1 + TX7BE) =G= PX7BE;
PX7FR_US.. PX7FR * (1 + TX7US) =G= PX7US;
PX7US_FR.. PX7US * (1 + TX7FR) =G= PX7FR;
PX7UK_US.. PX7UK * (1 + TX7US) =G= PX7US;
PX7US_UK.. PX7US * (1 + TX7UK) =G= PX7UK;
PX7IT_US.. PX7IT * (1 + TX7US) =G= PX7US;
PX7US_IT.. PX7US * (1 + TX7IT) =G= PX7IT;
PX7CN_US.. PX7CN * (1 + TX7US) =G= PX7US;
PX7US_CN.. PX7US * (1 + TX7CN) =G= PX7CN;
PX7JP_US.. PX7JP * (1 + TX7US) =G= PX7US;
PX7US_JP.. PX7US * (1 + TX7JP) =G= PX7JP;

PX8NL_DE.. PX8NL =G= PX8DE;
PX8DE_NL.. PX8DE =G= PX8NL;

PX8NL_BE.. PX8NL =G= PX8BE;
PX8BE_NL.. PX8BE =G= PX8NL;
PX8BE_DE.. PX8BE =G= PX8DE;
PX8DE_BE.. PX8DE =G= PX8BE;

PX8NL_FR.. PX8NL =G= PX8FR;
PX8FR_NL.. PX8FR =G= PX8NL;
PX8FR_BE.. PX8FR =G= PX8BE;
PX8BE_FR.. PX8BE =G= PX8FR;
PX8FR_DE.. PX8FR =G= PX8DE;
PX8DE_FR.. PX8DE =G= PX8FR;

PX8NL_UK.. PX8NL =G= PX8UK;
PX8UK_NL.. PX8UK =G= PX8NL;
PX8DE_UK.. PX8DE =G= PX8UK;
PX8UK_DE.. PX8UK =G= PX8DE;
PX8BE_UK.. PX8BE =G= PX8UK;
PX8UK_BE.. PX8UK =G= PX8BE;
PX8FR_UK.. PX8FR =G= PX8UK;
PX8UK_FR.. PX8UK =G= PX8FR;

PX8NL_IT.. PX8NL =G= PX8IT;
PX8IT_NL.. PX8IT =G= PX8NL;
PX8DE_IT.. PX8DE =G= PX8IT;
PX8IT_DE.. PX8IT =G= PX8DE;
PX8BE_IT.. PX8BE =G= PX8IT;
PX8IT_BE.. PX8IT =G= PX8BE;
PX8FR_IT.. PX8FR =G= PX8IT;
PX8IT_FR.. PX8IT =G= PX8FR;
PX8UK_IT.. PX8UK =G= PX8IT;
PX8IT_UK.. PX8IT =G= PX8UK;

PX8NL_CN.. PX8NL * (1 + TX8CN) =G= PX8CN;
PX8CN_NL.. PX8CN * (1 + TX8NL) =G= PX8NL;
PX8DE_CN.. PX8DE * (1 + TX8CN) =G= PX8CN;
PX8CN_DE.. PX8CN * (1 + TX8DE) =G= PX8DE;
PX8BE_CN.. PX8BE * (1 + TX8CN) =G= PX8CN;
PX8CN_BE.. PX8CN * (1 + TX8BE) =G= PX8BE;
PX8FR_CN.. PX8FR * (1 + TX8CN) =G= PX8CN;
PX8CN_FR.. PX8CN * (1 + TX8FR) =G= PX8FR;
PX8UK_CN.. PX8UK * (1 + TX8CN) =G= PX8CN;
PX8CN_UK.. PX8CN * (1 + TX8UK) =G= PX8UK;

PX8IT_CN.. PX8IT * (1 + TX8CN) =G= PX8CN;
PX8CN_IT.. PX8CN * (1 + TX8IT) =G= PX8IT;

PX8NL_JP.. PX8NL * (1 + TX8JP) =G= PX8JP;
PX8JP_NL.. PX8JP * (1 + TX8NL) =G= PX8NL;
PX8DE_JP.. PX8DE * (1 + TX8JP) =G= PX8JP;
PX8JP_DE.. PX8JP * (1 + TX8DE) =G= PX8DE;
PX8BE_JP.. PX8BE * (1 + TX8JP) =G= PX8JP;
PX8JP_BE.. PX8JP * (1 + TX8BE) =G= PX8BE;
PX8FR_JP.. PX8FR * (1 + TX8JP) =G= PX8JP;
PX8JP_FR.. PX8JP * (1 + TX8FR) =G= PX8FR;
PX8UK_JP.. PX8UK * (1 + TX8JP) =G= PX8JP;
PX8JP_UK.. PX8JP * (1 + TX8UK) =G= PX8UK;
PX8IT_JP.. PX8IT * (1 + TX8JP) =G= PX8JP;
PX8JP_IT.. PX8JP * (1 + TX8IT) =G= PX8IT;
PX8CN_JP.. PX8CN * (1 + TX8JP) =G= PX8JP;
PX8JP_CN.. PX8JP * (1 + TX8CN) =G= PX8CN;

PX8NL_US.. PX8NL * (1 + TX8US) =G= PX8US;
PX8US_NL.. PX8US * (1 + TX8NL) =G= PX8NL;
PX8DE_US.. PX8DE * (1 + TX8US) =G= PX8US;
PX8US_DE.. PX8US * (1 + TX8DE) =G= PX8DE;
PX8BE_US.. PX8BE * (1 + TX8US) =G= PX8US;
PX8US_BE.. PX8US * (1 + TX8BE) =G= PX8BE;
PX8FR_US.. PX8FR * (1 + TX8US) =G= PX8US;
PX8US_FR.. PX8US * (1 + TX8FR) =G= PX8FR;
PX8UK_US.. PX8UK * (1 + TX8US) =G= PX8US;
PX8US_UK.. PX8US * (1 + TX8UK) =G= PX8UK;
PX8IT_US.. PX8IT * (1 + TX8US) =G= PX8US;
PX8US_IT.. PX8US * (1 + TX8IT) =G= PX8IT;
PX8CN_US.. PX8CN * (1 + TX8US) =G= PX8US;
PX8US_CN.. PX8US * (1 + TX8CN) =G= PX8CN;
PX8JP_US.. PX8JP * (1 + TX8US) =G= PX8US;
PX8US_JP.. PX8US * (1 + TX8JP) =G= PX8JP;

* (The tariff for good 9 is equal to zero throughout all simulations)

PX9NL_DE.. PX9NL * (1 + TX9DE) =G= PX9DE;
PX9DE_NL.. PX9DE * (1 + TX9NL) =G= PX9NL;

PX9NL_BE.. PX9NL * (1 + TX9BE) =G= PX9BE;
PX9BE_NL.. PX9BE * (1 + TX9NL) =G= PX9NL;
PX9BE_DE.. PX9BE * (1 + TX9DE) =G= PX9DE;
PX9DE_BE.. PX9DE * (1 + TX9BE) =G= PX9BE;

PX9NL_FR.. PX9NL * (1 + TX9FR) =G= PX9FR;
PX9FR_NL.. PX9FR * (1 + TX9NL) =G= PX9NL;
PX9FR_BE.. PX9FR * (1 + TX9BE) =G= PX9BE;
PX9BE_FR.. PX9BE * (1 + TX9FR) =G= PX9FR;
PX9FR_DE.. PX9FR * (1 + TX9DE) =G= PX9DE;
PX9DE_FR.. PX9DE * (1 + TX9FR) =G= PX9FR;

PX9NL_UK.. PX9NL * (1 + TX9UK) =G= PX9UK;
PX9UK_NL.. PX9UK * (1 + TX9NL) =G= PX9NL;
PX9DE_UK.. PX9DE * (1 + TX9UK) =G= PX9UK;
PX9UK_DE.. PX9UK * (1 + TX9DE) =G= PX9DE;
PX9BE_UK.. PX9BE * (1 + TX9UK) =G= PX9UK;
PX9UK_BE.. PX9UK * (1 + TX9BE) =G= PX9BE;
PX9FR_UK.. PX9FR * (1 + TX9UK) =G= PX9UK;
PX9UK_FR.. PX9UK * (1 + TX9FR) =G= PX9FR;

PX9NL_IT.. PX9NL * (1 + TX9IT) =G= PX9IT;
PX9IT_NL.. PX9IT * (1 + TX9NL) =G= PX9NL;

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PX9DE_IT..    PX9DE * (1 + TX9IT) =G= PX9IT;
PX9IT_DE..    PX9IT * (1 + TX9DE) =G= PX9DE;
PX9BE_IT..    PX9BE * (1 + TX9IT) =G= PX9IT;
PX9IT_BE..    PX9IT * (1 + TX9BE) =G= PX9BE;
PX9FR_IT..    PX9FR * (1 + TX9IT) =G= PX9IT;
PX9IT_FR..    PX9IT * (1 + TX9FR) =G= PX9FR;
PX9UK_IT..    PX9UK * (1 + TX9IT) =G= PX9IT;
PX9IT_UK..    PX9IT * (1 + TX9UK) =G= PX9UK;


PX9NL_CN..    PX9NL * (1 + TX9CN) =G= PX9CN;
PX9CN_NL..    PX9CN * (1 + TX9NL) =G= PX9NL;
PX9DE_CN..    PX9DE * (1 + TX9CN) =G= PX9CN;
PX9CN_DE..    PX9CN * (1 + TX9DE) =G= PX9DE;
PX9BE_CN..    PX9BE * (1 + TX9CN) =G= PX9CN;
PX9CN_BE..    PX9CN * (1 + TX9BE) =G= PX9BE;
PX9FR_CN..    PX9FR * (1 + TX9CN) =G= PX9CN;
PX9CN_FR..    PX9CN * (1 + TX9FR) =G= PX9FR;
PX9UK_CN..    PX9UK * (1 + TX9CN) =G= PX9CN;
PX9CN_UK..    PX9CN * (1 + TX9UK) =G= PX9UK;
PX9IT_CN..    PX9IT * (1 + TX9CN) =G= PX9CN;
PX9CN_IT..    PX9CN * (1 + TX9IT) =G= PX9IT;


PX9NL_JP..    PX9NL * (1 + TX9JP) =G= PX9JP;
PX9JP_NL..    PX9JP * (1 + TX9NL) =G= PX9NL;
PX9DE_JP..    PX9DE * (1 + TX9JP) =G= PX9JP;
PX9JP_DE..    PX9JP * (1 + TX9DE) =G= PX9DE;
PX9BE_JP..    PX9BE * (1 + TX9JP) =G= PX9JP;
PX9JP_BE..    PX9JP * (1 + TX9BE) =G= PX9BE;
PX9FR_JP..    PX9FR * (1 + TX9JP) =G= PX9JP;
PX9JP_FR..    PX9JP * (1 + TX9FR) =G= PX9FR;
PX9UK_JP..    PX9UK * (1 + TX9JP) =G= PX9JP;
PX9JP_UK..    PX9JP * (1 + TX9UK) =G= PX9UK;
PX9IT_JP..    PX9IT * (1 + TX9JP) =G= PX9JP;
PX9JP_IT..    PX9JP * (1 + TX9IT) =G= PX9IT;
PX9CN_JP..    PX9CN * (1 + TX9JP) =G= PX9JP;
PX9JP_CN..    PX9JP * (1 + TX9CN) =G= PX9CN;


PX9NL_US..    PX9NL * (1 + TX9US) =G= PX9US;
PX9US_NL..    PX9US * (1 + TX9NL) =G= PX9NL;
PX9DE_US..    PX9DE * (1 + TX9US) =G= PX9US;
PX9US_DE..    PX9US * (1 + TX9DE) =G= PX9DE;
PX9BE_US..    PX9BE * (1 + TX9US) =G= PX9US;
PX9US_BE..    PX9US * (1 + TX9BE) =G= PX9BE;
PX9FR_US..    PX9FR * (1 + TX9US) =G= PX9US;
PX9US_FR..    PX9US * (1 + TX9FR) =G= PX9FR;
PX9UK_US..    PX9UK * (1 + TX9US) =G= PX9US;
PX9US_UK..    PX9US * (1 + TX9UK) =G= PX9UK;
PX9IT_US..    PX9IT * (1 + TX9US) =G= PX9US;
PX9US_IT..    PX9US * (1 + TX9IT) =G= PX9IT;
PX9CN_US..    PX9CN * (1 + TX9US) =G= PX9US;
PX9US_CN..    PX9US * (1 + TX9CN) =G= PX9CN;
PX9JP_US..    PX9JP * (1 + TX9US) =G= PX9US;
PX9US_JP..    PX9US * (1 + TX9JP) =G= PX9JP;
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*       COUPLING LISTED EQUATIONS AND VARIABLES

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PRF_X8NL.X8NL, PRF_X9NL.X9NL,
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PRF_X9DE.X9DE,
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        MKT_X7FR.PX7FR, MKT_X8FR.PX8FR, MKT_X9FR.PX9FR, MKT_LFR.PLFR, MKT_KFR.PKFR, MKT_WFR.PWFR, I_CONSFR.CONSFR,
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PX9IT_DE.X9IT_DE, PX9DE_IT.X9DE_IT, PX9IT_BE.X9IT_BE, PX9BE_IT.X9BE_IT, PX9IT_NL.X9IT_NL, PX9NL_IT.X9NL_IT,
PX9IT_FR.X9IT_FR, PX9FR_IT.X9FR_IT, PX9IT_UK.X9IT_UK, PX9UK_IT.X9UK_IT,
PX9CN_DE.X9CN_DE, PX9DE_CN.X9DE_CN, PX9CN_BE.X9CN_BE, PX9BE_CN.X9BE_CN, PX9CN_NL.X9CN_NL, PX9NL_CN.X9NL_CN,
PX9CN_FR.X9CN_FR, PX9FR_CN.X9FR_CN, PX9CN_UK.X9CN_UK, PX9UK_CN.X9UK_CN, PX9CN_IT.X9CN_IT, PX9IT_CN.X9IT_CN,
PX9JP_DE.X9JP_DE, PX9DE_JP.X9DE_JP, PX9JP_BE.X9JP_BE, PX9BE_JP.X9BE_JP, PX9JP_NL.X9JP_NL, PX9NL_JP.X9NL_JP,
PX9JP_FR.X9JP_FR, PX9FR_JP.X9FR_JP, PX9JP_UK.X9JP_UK, PX9UK_JP.X9UK_JP, PX9JP_IT.X9JP_IT, PX9IT_JP.X9IT_JP, PX9JP_CN.X9JP_CN, PX9CN_JP.X9CN_JP

PX9US_DE.X9US_DE, PX9DE_US.X9DE_US, PX9US_BE.X9US_BE, PX9BE_US.X9BE_US, PX9US_NL.X9US_NL, PX9NL_US.X9NL_US,
PX9US_FR.X9US_FR, PX9FR_US.X9FR_US, PX9US_UK.X9US_UK, PX9UK_US.X9UK_US, PX9US_IT.X9US_IT, PX9IT_US.X9IT_US, PX9US_CN.X9US_CN, PX9CN_US.X9CN_US,
PX9US_JP.X9US_JP, PX9JP_US.X9JP_US /;

*   DEFINING A NUMERAIRE GOOD

PX0NL.FX = 1;

*   ESTABLISHING LOWER BOUNDS

PKNL.LO = 0.0001; PLNL.LO = 0.0001;
PKDE.LO = 0.0001; PLNL.LO = 0.0001;
PX0DE.LO = 0.0001; PX1NL.LO = 0.0001; PX1DE.LO = 0.0001; PX2NL.LO = 0.0001; PX2DE.LO = 0.0001;
PX3NL.LO = 0.0001; PX3DE.LO = 0.0001; PX5NL.LO = 0.0001; PX5DE.LO = 0.0001;
PX6NL.LO = 0.0001; PX6DE.LO = 0.0001; PX7NL.LO = 0.0001; PX7DE.LO = 0.0001;
PX8NL.LO = 0.0001; PX8DE.LO = 0.0001; PX9NL.LO = 0.0001; PX9DE.LO = 0.0001;

*   ASSIGNING POTENTIAL INITIAL EQUILIBRIUM VALUES

X0NL.L=29; X1NL.L=26; X2NL.L = 47; X3NL.L=45; X5NL.L=38; X6NL.L=48; X7NL.L=28; X8NL.L=34; X9NL.L=146; WNL.L=198;
PX0NL.L=1; PX1NL.L=1; PX2NL.L = 1; PX3NL.L=1; PX5NL.L=1; PX6NL.L=1; PX7NL.L=1; PX8NL.L=1; PX9NL.L=1;
PKNL.L=1; PLNL.L=1; CONSNL.L=198;

X0DE.L=26; X1DE.L=24; X2DE.L = 37; X3DE.L=25; X5DE.L=28; X6DE.L=49; X7DE.L=38; X8DE.L=29; X9DE.L=130; WDE.L=198;
PX0DE.L=1; PX1DE.L=1; PX2DE.L = 1; PX3DE.L=1; PX5DE.L=1; PX6DE.L=1; PX7DE.L=1; PX8DE.L=1; PX9DE.L=1;
PKDE.L=1; PLDE.L=1; CONSDE.L=198;

X0BE.L=29; X1BE.L=26; X2BE.L = 48; X3BE.L=46; X5BE.L=38; X6BE.L=49; X7BE.L=28; X8BE.L=34; X9BE.L=146; WBE.L=198;
PX0BE.L=1; PX1BE.L=1; PX2BE.L = 1; PX3BE.L=1; PX5BE.L=1; PX6BE.L=1; PX7BE.L=1; PX8BE.L=1; PX9BE.L=1;
PKBE.L=1; PLBE.L=1; CONSBE.L=198;

X0FR.L=43; X1FR.L=81; X2FR.L = 35; X3FR.L=28; X5FR.L=28; X6FR.L=64; X7FR.L=45; X8FR.L=29; X9FR.L=159; WFR.L=198;
PX0FR.L=1; PX1FR.L=1; PX2FR.L = 1; PX3FR.L=1; PX5FR.L=1; PX6FR.L=1; PX7FR.L=1; PX8FR.L=1; PX9FR.L=1;
PKFR.L=1; PLFR.L=1; CONSFR.L=198;

X0UK.L=26; X1UK.L=24; X2UK.L = 57; X3UK.L=24; X5UK.L=25; X6UK.L=51; X7UK.L=35; X8UK.L=29; X9UK.L=123; WUK.L=198;
PX0UK.L=1; PX1UK.L=1; PX2UK.L = 1; PX3UK.L=1; PX5UK.L=1; PX6UK.L=1; PX7UK.L=1; PX8UK.L=1; PX9UK.L=1;
PKUK.L=1; PLUK.L=1; CONSUK.L=198;

X0IT.L=27; X1IT.L=26; X2IT.L = 36; X3IT.L = 22; X5IT.L=31; X6IT.L=54; X7IT.L=49; X8IT.L=29; X9IT.L=129; WIT.L=198;
PX0IT.L=1; PX1IT.L=1; PX2IT.L = 1; PX3IT.L = 1; PX5IT.L=1; PX6IT.L=1; PX7IT.L=1; PX8IT.L=1; PX9IT.L=1;
PKIT.L=1; PLIT.L=1; CONSIT.L=198;

X0CN.L=29; X1CN.L=26; X2CN.L = 48; X3CN.L=46; X5CN.L=38; X6CN.L=49; X7CN.L=28; X8CN.L=34; X9CN.L=146; WCN.L=198;

PX0CN.L=1; PX1CN.L=1; PX2CN.L = 1; PX3CN.L=1; PX5CN.L=1; PX6CN.L=1; PX7CN.L=1; PX8CN.L=1; PX9CN.L=1;
PKCN.L=1; PLCN.L=1; CONSCN.L=198;

X0JP.L=28; X1JP.L=28; X2JP.L = 51; X3JP.L=51; X5JP.L=53; X6JP.L=77; X7JP.L=22; X8JP.L=25; X9JP.L=130; WJP.L=198;
PX0JP.L=1; PX1JP.L=1; PX2JP.L = 1; PX3JP.L=1; PX5JP.L=1; PX6JP.L=1; PX7JP.L=1; PX8JP.L=1; PX9JP.L=1;
PKJP.L=1; PLJP.L=1; CONSJP.L=198;

X0US.L=28; X1US.L=23; X2US.L = 81; X3US.L=60; X5US.L=56; X6US.L=92; X7US.L=26; X8US.L=64; X9US.L=134; WUS.L=198;
PX0US.L=1; PX1US.L=1; PX2US.L = 1; PX3US.L=1; PX5US.L=1; PX6US.L=1; PX7US.L=1; PX8US.L=1; PX9US.L=1;
PKUS.L=1; PLUS.L=1; CONSUS.L=198;

SOLVE BASIC USING MCP;

*   DISPLAY STATEMENT, GROUPING ESSENTIAL OUTPUT

display
'NETHERLANDS NL'
    WNL.L, WDE.L, WBE.L, WFR.L, WUK.L, WIT.L, WCN.L, WJP.L, WUS.L,
    PX0NL.L, PX1NL.L, PX2NL.L, PX3NL.L, PX5NL.L, PX6NL.L, PX7NL.L, PX8NL.L, PX9NL.L,
    PX0DE.L, PX1DE.L, PX2DE.L, PX3DE.L, PX5DE.L, PX6DE.L, PX7DE.L, PX8DE.L, PX9DE.L,
    PX0BE.L, PX1BE.L, PX2BE.L, PX3BE.L, PX5BE.L, PX6BE.L, PX7BE.L, PX8BE.L, PX9BE.L,
    PX0FR.L, PX1FR.L, PX2FR.L, PX3FR.L, PX5FR.L, PX6FR.L, PX7FR.L, PX8FR.L, PX9FR.L,
    PX0UK.L, PX1UK.L, PX2UK.L, PX3UK.L, PX5UK.L, PX6UK.L, PX7UK.L, PX8UK.L, PX9UK.L,
    PX0IT.L, PX1IT.L, PX2IT.L, PX3IT.L, PX5IT.L, PX6IT.L, PX7IT.L, PX8IT.L, PX9IT.L,
    PX0CN.L, PX1CN.L, PX2CN.L, PX3CN.L, PX5CN.L, PX6CN.L, PX7CN.L, PX8CN.L, PX9CN.L,
    PX0JP.L, PX1JP.L, PX2JP.L, PX3JP.L, PX5JP.L, PX6JP.L, PX7JP.L, PX8JP.L, PX9JP.L,
    PX0US.L, PX1US.L, PX2US.L, PX3US.L, PX5US.L, PX6US.L, PX7US.L, PX8US.L, PX9US.L,
    PLNL.L, PKNL.L, PLDE.L, PKDE.L, PLBE.L, PKBE.L, PLFR.L, PKFR.L, PLUK.L, PKUK.L, PLIT.L, PKIT.L, PLCN.L, PKCN.L, PLJP.L, PKJP.L,PLUS.L, PKUS.L,

 X0NL.L, X1NL.L, X2NL.L, X3NL.L, X5NL.L, X6NL.L, X7NL.L, X8NL.L, X9NL.L,
    X0NL_DE.L, X0DE_NL.L, X0NL_BE.L, X0BE_NL.L, X0NL_FR.L, X0FR_NL.L, X0NL_UK.L, X0UK_NL.L, X0NL_IT.L, X0IT_NL.L, X0NL_CN.L, X0CN_NL.L,
X0NL_JP.L, X0JP_NL.L, X0NL_US.L, X0US_NL.L,
    X1NL_DE.L, X1DE_NL.L, X1NL_BE.L, X1BE_NL.L, X1NL_FR.L, X1FR_NL.L, X1NL_UK.L, X1UK_NL.L, X1NL_IT.L, X1IT_NL.L, X1NL_CN.L, X1CN_NL.L,
X1NL_JP.L, X1JP_NL.L, X1NL_US.L, X1US_NL.L,
    X2NL_DE.L, X2DE_NL.L, X2NL_BE.L, X2BE_NL.L, X2NL_FR.L, X2FR_NL.L, X2NL_UK.L, X2UK_NL.L, X2NL_IT.L, X2IT_NL.L, X2NL_CN.L, X2CN_NL.L,
X2NL_JP.L, X2JP_NL.L, X2NL_US.L, X2US_NL.L,
    X3NL_DE.L, X3DE_NL.L, X3NL_BE.L, X3BE_NL.L, X3NL_FR.L, X3FR_NL.L, X3NL_UK.L, X3UK_NL.L, X3NL_IT.L, X3IT_NL.L, X3NL_CN.L, X3CN_NL.L,
X3NL_JP.L, X3JP_NL.L, X3NL_US.L, X3US_NL.L,
    X5NL_DE.L, X5DE_NL.L, X5NL_BE.L, X5BE_NL.L, X5NL_FR.L, X5FR_NL.L, X5NL_UK.L, X5UK_NL.L, X5NL_IT.L, X5IT_NL.L, X5NL_CN.L, X5CN_NL.L,
X5NL_JP.L, X5JP_NL.L, X5NL_US.L, X5US_NL.L,
    X6NL_DE.L, X6DE_NL.L, X6NL_BE.L, X6BE_NL.L, X6NL_FR.L, X6FR_NL.L, X6NL_UK.L, X6UK_NL.L, X6NL_IT.L, X6IT_NL.L, X6NL_CN.L, X6CN_NL.L,
X6NL_JP.L, X6JP_NL.L, X6NL_US.L, X6US_NL.L,
    X7NL_DE.L, X7DE_NL.L, X7NL_BE.L, X7BE_NL.L, X7NL_FR.L, X7FR_NL.L, X7NL_UK.L, X7UK_NL.L, X7NL_IT.L, X7IT_NL.L, X7NL_CN.L, X7CN_NL.L,
X7NL_JP.L, X7JP_NL.L, X7NL_US.L, X7US_NL.L,
    X8NL_DE.L, X8DE_NL.L, X8NL_BE.L, X8BE_NL.L, X8NL_FR.L, X8FR_NL.L, X8NL_UK.L, X8UK_NL.L, X8NL_IT.L, X8IT_NL.L, X8NL_CN.L, X8CN_NL.L,
X8NL_JP.L, X8JP_NL.L, X8NL_US.L, X8US_NL.L,
    X9NL_DE.L, X9DE_NL.L, X9NL_BE.L, X9BE_NL.L, X9NL_FR.L, X9FR_NL.L, X9NL_UK.L, X9UK_NL.L, X9NL_IT.L, X9IT_NL.L, X9NL_CN.L, X9CN_NL.L,
X9NL_JP.L, X9JP_NL.L, X9NL_US.L, X9US_NL.L;