FIRST DRAFT - COMMENTS WELCOME

REAL WAGES AND THE STRUCTURE OF IMPORTS: THEORY AND EVIDENCE

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Abstract: In this paper we use a model of trade in vertically differentiated products to derive two hypotheses regarding the relationship between real wages and the composition of a country's imports. According to the first hypothesis, an increase in domestic wages is expected to reduce the share in total imports for goods in which the domestic comparative advantage is in high quality varieties of these goods. The second hypothesis states that an increase in domestic wages will increase the share of a good's imports originating from countries which have a comparative advantage in high quality varieties of this good. We find considerable empirical support for both hypotheses in the data for Germany, Japan and the United States. This leads us to conclude that in addition to supply factors, demand plays an important role in international trade.

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1. Introduction

The traditional theories of international trade have been mainly employed to answer the following question: What goods do countries trade, and why? Almost invariably the answer to the above question is based on some notion of comparative advantage, i.e. countries tend to import those goods which have the highest relative prices in autarky. In the Ricardian model trade is based on uneven international differences in technology. In the Hecksher-Ohlin model technology differences are assumed away to focus on the differences between countries in their relative supplies of labour and capital and on differences between commodities in the intensities with which they use these factors as the basis of international trade. In the specific-factors model, the primary technological determinant of comparative advantage and trade patterns is the relative abundance of sector specific capital.

Despite the general equilibrium character of the above models, it is primarily variations in the specification of the supply side that makes them different from each other. Demand side influences are usually neglected by assuming domestic and foreign households have identical and homogenous utility functions[1]. The most notable exceptions to this is Markusen's (1986) explanation of the volume and direction of trade by combining nonhomothetic preferences with scale economies and differences in endowments[2]. In his model differences in relative factor endowments, scale economies and horizontal product differentiation explain why intra-North trade will be intra-

[1] This is also true of the more recent developments in trade theory which incorporate increasing returns and imperfect competition (see, Helpman and Krugman, 1985).

[2] Empirical support for the importance of nonhomothetic preferences in international trade has also been provided by Hunter and Markusen (1988) and Hunter (1991). Hunter's counterfactual exercise was designed to estimate the volume of trade caused by nonhomothetic preferences. She found that approximately one-quarter of the volume of inter-industry trade flows is caused by nonhomothetic preferences.

industry trade in differentiated manufactured goods whereas North-South trade will be inter-industry exchange of manufactures for the homogeneous good. The addition of the assumption of nonhomothetic preference allows Markusen to explain the predominance of trade between developed countries rather than between developed and developing countries.

This paper offers an alternative explanation - and some evidence - for the importance of demand factors in determining the composition of a country's imports[3]. The main idea of the paper rests on assuming that trade is conducted in products which are differentiated according to quality (vertical differentiation). In our basic model, the domestic country is assumed to trade with the rest of the world (ROW) and to have absolute advantage at all quality levels and comparative advantage at high quality varieties. In this setting, the ratio of domestic to foreign wages determines the "dividing" quality level; all varieties with quality up to the "dividing" quality level will be produced at a lower cost by ROW firms, and the remaining varieties will be produced at a lower cost by domestic firms[4]. This aspect of our model is borrowed from Flam and Helpman's (1987) modeling of the effects of technical progress and population growth on trade patterns and product cycles in a North-South context. There is, however, one difference (amongst others) between their model and ours which we wish to highlight. They assume that production of the differentiated good

[3] The evidence in favour of supply factors as determinants of international trade has been rather mixed. The factor-proportions model has been found to not match well with the data (see, for example, Leontief (1954), Leamer (1984) and Bowen *et al*. (1987); but see also Brecher and Choudhri (1993) who find supporting evidence in Canadian-U.S. data). Assuming technological differences between countries seems to make the factor proportions model more consistent with the data (see, for example, Trefler (1995) and Harrigan (1997).

[4] There is a close correspondence between the "dividing" quality level in our paper and the "dividing" good in Dornbusch, Fischer and Samuelson's (1977) presentation of the Ricardian model with a continuum of goods.

requires only the use of labour; we assume that in addition to labour, production of the differentiated good requires the use of an imported intermediate input. This assumption allows us to translate nominal wage changes in the domestic country to real wage changes.

Wage (income) changes play a dual rule in our model. An increase in domestic wages reduces the range of varieties which the domestic country can offer at a lower cost than the ROW. This is expected - *ceteris paribus* - to increase imports of the domestic country. But, it also induces domestic households to demand higher quality varieties than before, i.e. there is a shift in demand toward varieties in which the domestic country has comparative advantage. This second effect may be so strong that it can lead some households to switch from demanding (low quality) imported varieties to (high quality) domestically produced ones. Examining the consequences of this "distribution of demand" effect for the composition of the domestic country's imports is the objective of this paper.

To this effect we allow in Section 2.2 the domestic country to produce and trade with the ROW a large number of vertically differentiated products. For a subset of these products the domestic country is assumed to have comparative advantage in high quality varieties, whereas for the rest of the products the comparative advantage lies in low quality varieties. An increase in domestic wages (incomes) will reduce the range of varieties which the domestic country can offer at a lower cost than the ROW for all products. However, the "distribution of demand" effect will not work in the same direction for all products. For the subset of products in which the domestic comparative advantage lies in high quality goods, the "distribution of demand" effect will be working in opposite direction to the standard import expansion effect due to

higher wages. For the rest of the products, the "distribution of demand" effect will be reinforcing the standard import expansion effect, since higher wages (incomes) shift demand towards varieties in which the domestic country has a comparative disadvantage. An increase in domestic wages is thus expected to reduce the share (in total imports) of those goods imports in which the country has a comparative advantage in high quality varieties (*hypothesis 1*).

In Section 2.3 we develop a related hypothesis. Consider the domestic country trading in a single vertically differentiated product with many countries in the ROW. Every exporting country in the ROW will be offering some varieties at a lower cost than any other country. An increase in domestic wages shifts demand by domestic households to higher quality varieties. This implies that the share of domestic imports originating from countries which have comparative advantage in high quality varieties will increase (*hypothesis 2*).

In Section 3 we test the above hypotheses for Germany, Japan and the United States using detailed trade (i.e. for 69 goods) and country (i.e. for 45 countries) data. Our strategy relies on estimating how changes in real wage rates in the G-3 affect commodity imports shares (*hypothesis 1*) and country of origin imports shares (*hypothesis 2*). We then relate the estimated real wage coefficients to measures of revealed comparative advantage. Given that the bulk of demand by households in the G-3 will be on high quality products, measures of revealed comparative advantage will (in most cases) be closely associated with comparative advantage in high quality varieties. With respect to our second hypothesis, the estimated country-of-origin import share real wage coefficients for a single commodity (i.e. cars) are related with *a-priori* perceptions regarding the quality-niche that exporters of cars to the G-3

occupy. Given the strong empirical support that we find for both hypotheses, we conclude in the final section of the paper that demand effects are also important in determining trade flows.

2. The Model and its Implications

In the first part of this section we present a basic model in which the domestic country trades with the rest of world (ROW) in a single vertically differentiated product and we examine the effects of real wage rate changes on imports. In sub-section 2.2 we allow trade to be conducted in many differentiated commodities and draw implications about the relationship between the real wage rate and the share of each commodity's imports into the total imports of a country. In subsection 2.3 we return to the case of trade in a single vertically differentiated product but divide the ROW into many countries which we rank according to their technological capability in producing this good. We then proceed to examine the relationship between the domestic country's real wage rate and the origin of its imports.

2.1 The Basic Model

We construct the simplest possible model capable of illustrating the main idea of the paper. Given that our objective is the study of the partial equilibrium effects of wage rate changes on the composition of imports, we treat domestic (and ROW) wages as exogenous. The model is similar to Flam and Helpman (1987) and Copeland and Kotwal (1996) with respect to the specification of technology and preferences with one important exception. In contrast to these authors, who assume that labour is the only factor of production, we assume that production cannot take place without the use of imported intermediate inputs.

2.1.1 Technology

We start by assuming that there are two goods produced in the domestic country: a homogeneous non-traded good and a quality-differentiated product which is traded with the ROW. The ROW is also assumed to produce the differentiated product, albeit with a different technology. The homogeneous good *H* is produced under perfectly competitive conditions in the domestic country, with the use of labour *L*, and imported intermediate inputs *S* (e.g. oil). For the purpose of simplicity, and without any loss of generality, we assume that the homogeneous good is produced with Leontief technology[5]:

$$H = \min\{bL, bS\}. \tag{1}$$

Perfect competition ensures that

$$P_H = b(W + P_S) \tag{2}$$

where P_H is the price of the homogeneous good, W is the (domestic) wage rate, P_S is the domestic price of the imported intermediate input and β is a positive parameter.

The quality-differentiated good is also produced under perfectly competitive conditions. We assume that quality is measured by an index *Q* in the range [1, ∞], and that there is complete information regarding the quality index. We further assume that in both the domestic country and the ROW costs depend on quality, and that each unit of a given quality is produced at constant cost. That is, the production function for the quality-differentiated good in the domestic country is

[5] Schmid (1976) and Findlay and Rodriquez (1977) are among the first to employ this assumption in international economics.

$$Y_Q = \min\left\{\frac{L}{gQ^e}, \frac{S}{gQ^e}\right\}, \;\; e \geq 1, \; g > 0 \qquad (3)$$

where Y_Q denotes the number of units of quality Q produced in the domestic country and ε and γ are constant parameters. The above equation implies that although costs per unit in terms of quantity are constant, costs may be increasing per unit of the quality index. The latter assumption is motivated by the fact that increases in quality - for a given state of technological capability - involve the "sacrifice" of an increasing number of personnel. These workers must be allocated not only to the production of a higher number of features attached to each good (e.g. electric windows, air bags, ABS etc. in the case of automobiles) that directly absorb labour and intermediate inputs, but also to the development and refinement of these features. According to equation (3), the price at which each unit of quality Q will be offered is equal to

$$P(Q) = gQ^e (W + P_S) . \qquad (4)$$

The domestic country is assumed to have absolute advantage in the production of the quality-differentiated good, and this advantage becomes larger as the quality index increases. This assumption can be captured by writing the production function for the ROW (we denote variables pertaining to the ROW by an asterisk),

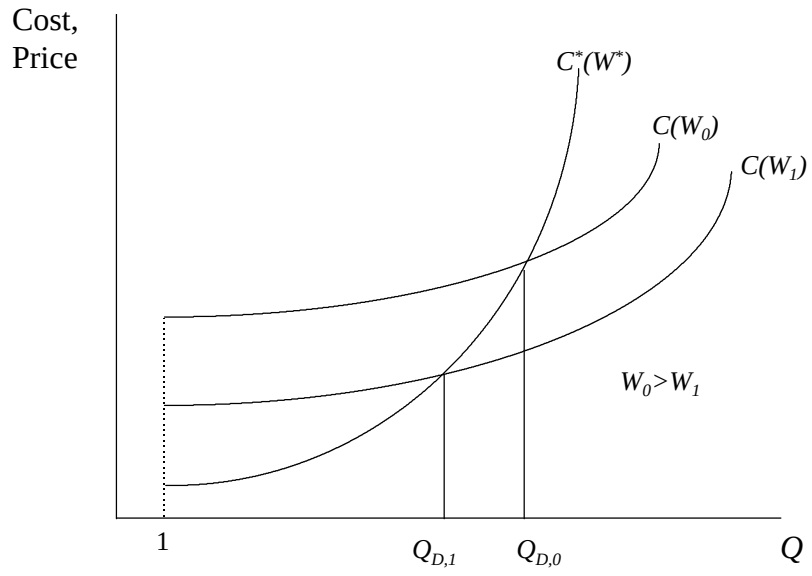
$$Y_Q^* = \min\left\{\frac{L^*}{dQ^m}, \frac{S}{dQ^m}\right\}, \;\; d > 0, \; m > 1, \; m > e, \; d > g \; . \qquad (5)$$

According to equation (5), the price at which each unit of quality Q, will be offered by ROW producers is equal to

$$P^*(Q) = dQ^m (W^* + P_S) \qquad (6)$$

Under these circumstances it is obvious that only if domestic wages are higher than ROW wages, will the ROW be able to produce some varieties (qualities) at a lower cost than the domestic country. Figure 1 illustrates such a case.

Figure 1: The relationship between quality and cost



The schedule $C(W_0)$ represents the cost of producing different qualities of the differentiated good in the domestic country. The position of the schedule obviously depends on domestic wages which are initially assumed to be W_0. For the ROW, the corresponding schedule is $C^*(W^*)$ with $W^* < W_0$. Under this particular structure of wages, the ROW will be offering all qualities up to $Q_{D,0}$ at a lower cost than the domestic country. We term $Q_{D,0}$ the "dividing" level of quality. All varieties with quality larger than $Q_{D,0}$ will be offered by domestic producers. From Figure 1 it is obvious that the domestic country can increase the range of varieties which it can produce at lower cost than the ROW, if the wage rate is reduced to W_1. The new dividing level of quality is now $Q_{D,1}$. This reduction in the range of varieties which the ROW can provide at lower cost, is traditionally always expected to result in a reduction of domestic imports.

2.1.2 Preferences

Households in both the domestic country and the ROW are assumed to have identical preferences, and to be endowed with one unit of labour which they offer inelastically. There are however, differences in skill between households (both within and across regions), which are reflected in differences in the endowment of effective labour supply. This is in turn reflected in differences in income across households. We assume that there are only three income classes: the low income, the middle income and the high income class. Let K_l, K_m, K_h signify the effective labour endowments of members in the low, middle and high income class respectively. Income of the three classes in then defined as $E_l = K_l W$; $E_m = K_m W$; $E_h = K_h W$ with $K_l < K_m < K_h$.

Following Flam and Helpman (1987) we assume that the homogeneous good can be consumed in every desirable quantity, whereas the quality-differentiated product is indivisible and consumers can consume only one unit of it. Households with income E choose the consumption level of the homogeneous product and the quality level (variety) of the differentiated product to

$$\max \; u(H,Q) \;\; s.t. \;\; P_H H + P(Q) = E \tag{7}$$

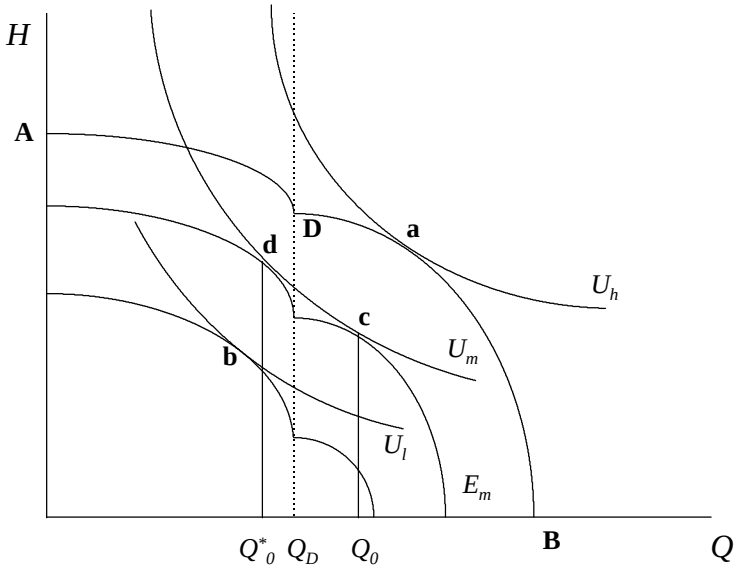
where H stands for the consumption of the homogeneous good, Q is the quality index of the differentiated good and $P(Q)$ is the price at which quality Q can be bought under free trade. We assume that for all households the solution to the above problem is such that the utility level that obtains from consuming both goods is higher than the utility that obtains from consuming only the homogeneous good.

The free-trade price of each quality (variety) of the differentiated product will be equal to the lower cost of producing in the two regions:

$$P(Q) = \min\{gQ^{e}(W + P_S), dQ^{m}(W^{*} + P_S)\} \qquad (8)$$

Equation (8) implies that the budget constraint is discontinuous at the "dividing" level of quality Q_D (see Figure 1), i.e. the quality level at which the cost of production is the same in the domestic country and the ROW. In Figure 2, the budget constraint for a high income household is shown as the curve ADB. Points **A** and **B** denote the maximum quantity and quality of the homogenous and the differentiated good, respectively, that a high income household can buy[6]. The budget constraint is discontinuous at point **D**, which corresponds to the "dividing" level of quality Q_D. It is then possible that there may be an income (say E_m) such that the household is indifferent between buying the ROW produced quality Q_0^* and the domestically produced quality Q_0. It is also clear that in this case that there will be no demand for qualities in the range (Q_0^*, Q_0). Further consideration of such a situation presents no

Figure 2: Incomes and Choice of Consumption



[6] The horizontal axis has been properly re-labelled to reflect the assumption that the differentiated good is not offered at qualities Q<1.

new insights for the analysis that follows. It is for this reason that we assume incomes of all classes to be such that consumers have a clear preference for either domestic or ROW varieties. This is also demonstrated in Figure 2, in which the low income household is shown to maximise its utility by consuming an imported variety (point **b**), whereas the high income household achieves it highest utility level by consuming a domestic produced variety (point **a**).

2.1.3 Real Wages and Imports

Before proceeding to the subsections deriving our main testable propositions, we examine how the presence of different income groups makes the effects of wage changes on the total volume of imports ambiguous. The effects of a reduction in the real wage rate on the (volume of) imports depend heavily on the specification of the initial equilibrium. We start by considering the case in which the domestically produced variety is consumed initially only by the high and the middle income households in the domestic country. In Figures 3a-3c the initial equilibrium is displayed by the tangency of the budget constraints and the indifference curves at point **0**. The assumption which is implicit in these Figures is that the share of income spent on homogenous goods declines as income rises. This assumption accords well with the empirical observation of a rising share of income spent on quality-differentiated goods as income increases and it could easily be approximated by a Stone-Geary utility function[7,8].

[7] In fact it can also be approximated by a Cobb-Douglas utility function, in this case of a non-linear and kinked budget constraint.

[8] Markusen *et al*. (1995) present data from the World Bank Development Report that support the assumption of the non-homogeneity of preferences. For example, in 1991, the shares of food in household budgets were 59 percent in Bangladesh, 48 percent in Indonesia, 30 percent in Greece, 17 percent in Japan and 10 percent in the U.S.. Obviously, these data may also be used to infer that preferences are not identical across countries.

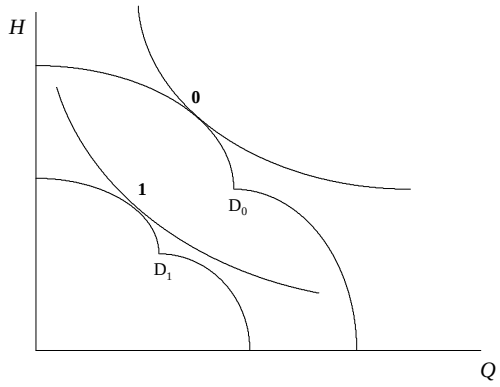
Consider now a decrease in domestic wages. Given perfect competition, all income accruing to domestic households consists of wages. This implies that the budget constraint moves inwards for all three income groups. This happens because the prices of both the homogeneous good and the quality differentiated good fall less than proportionately to the wage rate. The assumption of an exogenous price for the imported intermediate input is thus crucial for connecting nominal wage decreases to a decline in real income. Along with the decline in domestic real income there is an increase in the range of qualities (varieties) of the differentiated good which the domestic country can offer at a lower cost than the ROW. In Figure 3a, the decline in domestic wages is associated with a shift of consumption for the low-income domestic households from higher to lower quality ROW produced goods. In Figure 3c, as in Figure 3a, the decrease in domestic wages does not switch demand from goods (varieties) produced in one region to another. It only leads domestic consumers to demand lower quality (domestically produced) varieties than before.

In Figure 3b, the reduction in domestic wages is associated with a switch in the consumption pattern of the middle-income domestic consumers. The decline in their real income forces them to substitute lower quality ROW produced goods for the higher-quality domestically produced goods they were demanding before. This switch will increase the volume of domestic imports. The reduction in domestic wages could obviously lead to a shift from higher to lower quality domestically produced goods, without a corresponding increase in imports. But in any case, the traditional expected decrease in the volume of imports would not be observed.

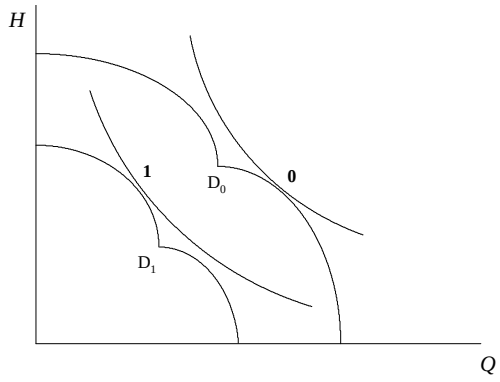
What Figures 3a-3c make clear is that, the volume of domestic imports may

Figure 3: Real Wage Changes and Imports

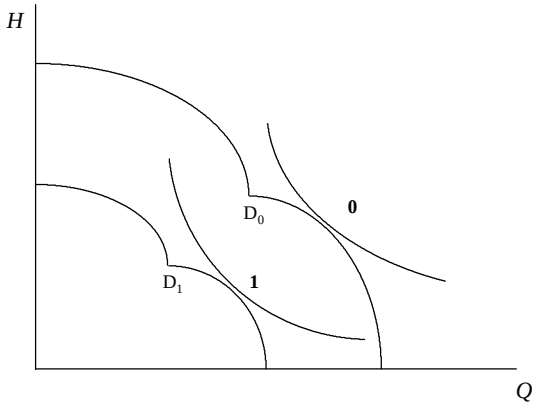
3a: Low Income Households



3b: Middle Income Households



3c: High Income Households



well increase following a decrease in domestic wages. The precise effect will obviously depend on the size of the three income groups. The larger the middle-

income group, the larger will be the expected increase in domestic imports since this is the group for which the decrease in real income may result in a switch from varieties produced in the domestic country to varieties produced in the ROW. The reason behind this unexpected result is that a decrease in domestic wages makes the home country even more competitive in the qualities (varieties) in which it already was more competitive than the ROW (as well expanding the range of products (varieties) which the domestic country produces at a lower cost). The decline in domestic wages also forces domestic consumers to switch their demand to lower quality goods. But these are precisely the goods in which the ROW has a comparative advantage. This latter effect has hitherto been ignored. The typical analysis of the effects of wage changes concentrates only on cost competitiveness, and it ignores the resulting switch in demand to varieties in which the ROW has a comparative advantage.

It must, however, be noted that the effects on the "total volume" of imports of differentiated goods resulting from a reduction in domestic wages is more complicated. Notice (as shown in Figure 3a), that the low income group still consumes varieties produced in the ROW after the reduction in domestic wages. But these imports are now of a lower quality than before. In some sense, the "total volume" of imports by this group decreases. It is thus possible (even for the special case presented in Figure 3) that, despite the switch depicted in Figure 3b, the aggregate "volume" of imports responds in the traditional manner following a decrease in domestic wages.

2.2 Real Wages and Commodity Import Shares

Consider now that the domestic country produces (in addition to the homogenous non-traded good) and trades with the ROW a number of vertically dif-

ferentiated goods which we denote by Y_i, i=1,...,n. For ease of diagrammatic exposition we assume that for all n goods there is a common production function in the domestic country which is described by equation (3) in section 2.1. For the ROW, it is now (more realistic) to assume that it has a absolute (technological) disadvan-tage in producing some of these goods (i.e., those Y_i for i=1,…,k; k<n) and absolute advantage in producing the rest of the goods (i.e., those Y_i with i=k+1, …,n). We also assume that for the first set of goods (i=1,…,k) the domestic country has comparative advantage in high quality varieties, whereas for the second set of goods (i=k+1,…,n) the domestic country has comparative advantage in low quality varieties. These assumptions are reflected in the following production function

$$
\begin{aligned}
&Y^{*}_{Q,i} = \min\left\{\frac{L^{*}}{dQ_i^{m_i}}, \frac{S}{dQ_i^{m_i}}\right\}, \quad i=1,\ldots k,\cdots n; \\
&d_1 > d_2 > \cdots d_{\mathrm{k}} > g > d_{\mathrm{k}+1} > d_{\mathrm{k}+2} > \cdots d_{\mathrm{n}}; \\
&m_1 > m_2 > \cdots m_{\mathrm{k}} > e > m_{\mathrm{k}+1} > m_{\mathrm{k}+2} > \cdots m_{\mathrm{n}};
\end{aligned}
\tag{9}
$$

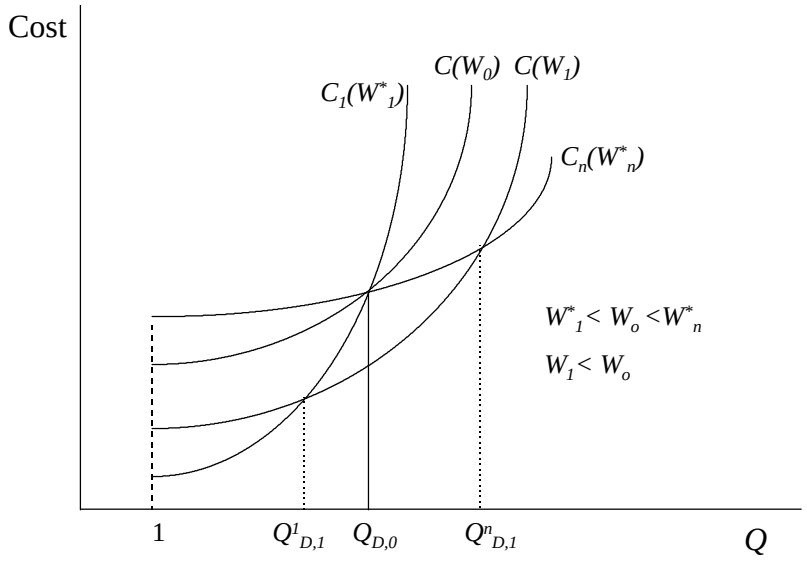
where $Y^{*}_{Q,i}$ denotes the number of units of quality Q of product i. The implication of this is that the domestic country has its highest comparative (technological) advantage in good 1 and its highest comparative (technological) disadvantage in good n.

At this point it is obvious that we can not maintain the assumption of wages being higher in the domestic country than in the ROW. For, in this case, under free trade there would be no domestic production of the goods in which the domestic country has absolute (technological) disadvantage. For this reason we can think of the ROW as consisting of many regions with each region producing only a small set of goods. Wages in each region *vis-a-vis* the domestic country will then depend on

whether a region produces the first (i=1,…,n) or the second (i=k+1,…,n) set of goods[9]. We therefore assume that W^*_i<W for i=1,…,k and W^*_i>W for i=k+1,…,n.

In Figure 4, we show the cost-quality schedules only for goods i=1 and i=n in the domestic country and in the ROW. For ease of exposition we have drawn them in such a way that (at the initial domestic wage rate, W_0) the "dividing" quality level $Q_{D,0}$ is the same for goods 1 and n. Varieties with quality up to $Q_{D,0}$ will be produced at a lower cost in the domestic country for good n, whereas varieties of good 1 with quality up to $Q_{D,0}$ will be cheaper to produce in the ROW. Consider now a decrease of domestic wages to W_1. The "dividing" quality level for good 1 is now $Q^1_{D,1}$, whereas for good n it is $Q^1_{D,n}$. Despite the movement of the "dividing" quality level for the two goods in opposite directions, for both goods there is an increase in the

Figure 4: Cost & Quality for Domestic Country & ROW



range of goods which the domestic country can offer at a lower cost. For good 1, it can now offer all varieties with quality larger than $Q^1_{D,1}$ (rather that $Q_{D,0}$) at a lower

[9] Alternatively, we may consider that the ROW is a single political entity, but that wages differ

cost. For good *n*, it can now offer at a lower cost all varieties with quality up to $Q^n_{D,1}$ (rather that up to $Q_{D,0}$). The increase in the range of varieties which the domestic country can offer at a lower cost is expected to decrease the imports of both goods. However, the decline in the wages (incomes) of the domestic households will induce them to demand lower quality varieties than before. For good *n*, this will reinforce the decrease in imports of this good. Households who were consuming varieties with quality larger than $Q^n_{D,1}$ before the decrease in wages, may now demand qualities smaller than $Q^n_{D,1}$. The decline in household income in this case shifts demand to varieties in which the country has comparative advantage, and it thus contributes to a larger decrease in imports. By the same token, the decline in wages shifts demand away from varieties in which the country has comparative advantage in the case of good 1. This effect, as we have shown in Figure 3, many even overturn the expected decrease in imports. In any case it dampens the decline in imports of good 1. We therefore expect that imports of good *n* will adjust by more than imports of good 1; the share of good *n* imports in the total imports of the country will decline or equivalently the share of good 1 imports will increase. We thus state our testable *hypothesis 1* as follows: *the stronger (weaker) is the comparative advantage of a country in high quality varieties of good i, the more likely that the share of this good's imports in total imports of the country will increase (decrease) as wages decrease*.

2.4 Real Wages and the Origin of Imports

We now return to the assumption of a single differentiated product but divide the ROW into many countries which produce and trade with the domestic country varieties of the differentiated good. Equation (3) continues to describe the tech-

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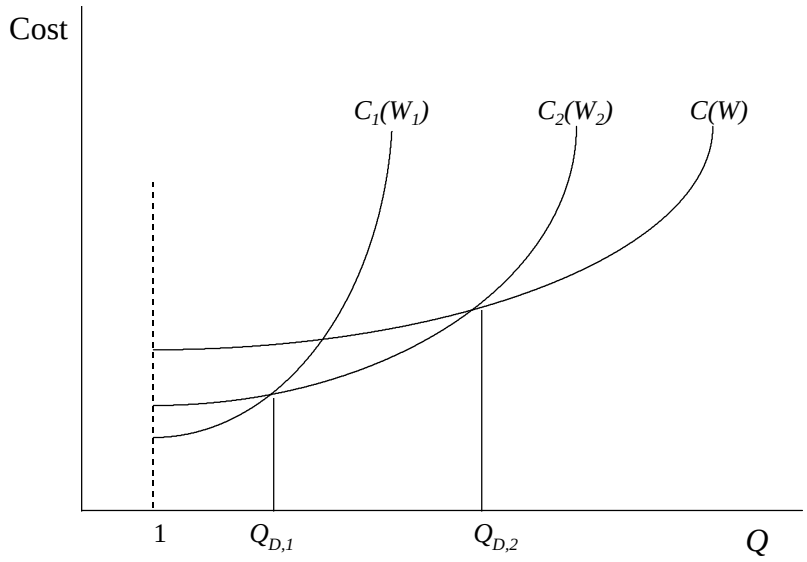
between sectors.

nological relationship between inputs and outputs for the domestic country. Let there be ϕ countries with which the domestic one is trading and which have the following production functions of differentiated products

$$Y_Q^j = \min\left\{\frac{L^j}{dQ_i^{m_j}}, \frac{S}{dQ^{m_j}}\right\}, \; j = 1,\ldots, f \; and \; m_1 > m_2 > \ldots m_f > e \; . \qquad (10)$$

Equation (10) implies that the trading partners of the domestic country are ranked according to their technological capability in producing the differentiated good. Country 1 is the least advanced technologically and country ϕ is the closest in technological capabilities to the domestic one. In Figure 5 we show the cost-quality schedules for each trading partner and the domestic country when ϕ=2.

Figure 5: Cost and Quality for Trading Partners

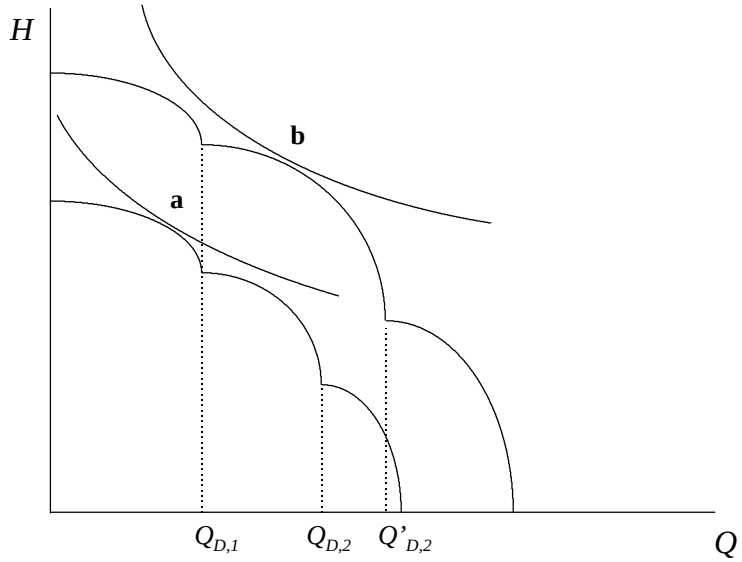


In drawing these schedules we have assumed that the higher is the technological ability of a country, the higher are its wages. Country 1 is the least cost producer for qualities up to $Q_{D,1}$, country 2 is the least cost producer for varieties between $Q_{D,1}$ and $Q_{D,2}$ and the domestic country for qualities higher that $Q_{D,2}$. Perfect competition and free trade imply that the price faced by domestic consumers will be

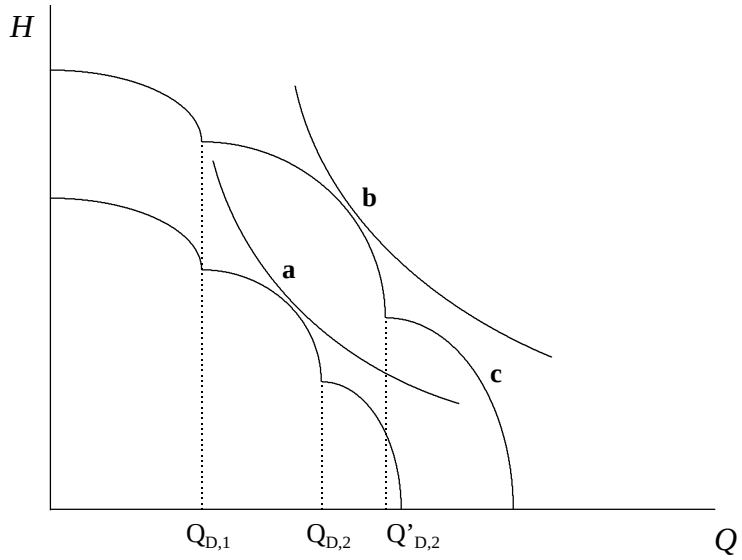
$$P(Q) = \min\left\{(W_1 + P_S)dQ^{m_1},\ (W_2 + P_S)dQ^{m_2},\ldots,\ (W_f + P_S)SQ^{m_f},\ (W + P_S)gQ^{e}\right\}. \quad (11)$$

Figure 6: Wages and the Origins of Imports

6a



6b



The effects of wage changes on the origin of the domestic country's imports are now examined with the aid of Figure 6. In Figure 6a we show a low income consumer buying a variety imported from country 1. An increase in domestic wages

will not change the "dividing" quality level between countries 1 and 2, but only between country 2 and the domestic country. The outward movement of the budget constraint allows the consumer to achieve maximum utility at point **b**, thereby consuming a variety imported from country 2. Imports from country 2 (the more technologically advanced trading partner) will therefore increase, and imports from country 1 will decrease. In Figure 6b we examine the case of a consumer whose income allows him to achieve maximum utility at point **a**, and to consume an imported variety produced in country 2. For this consumer the rise in income allows him to acquire a higher quality which is still produced at a lower cost in country 2. Nevertheless, this by no means the only outcome, as the consumer's preferences may such that he achieves maximum utility by switching his demand from imported varieties to domestically produced ones (to a point like **c**, for example). Imports from country 2 would, in this case, decrease.

Although the overall effect on the volume of imports from country 2 seems ambiguous, we may have some confidence about the change in its share in the imports of the domestic country. Note that a rise in domestic wages expands the range of qualities which country 2 can offer at a lower cost than its competitors (by the distance $Q_{D,2}\,Q'_{D,2}$ in Figure 6), although it leaves the range for country 1 unchanged. In addition, the across the board increase in incomes in the domestic country, increases the quality level demanded by all consumers thereby definitely decreasing the demand for the low quality varieties supplied by country 1. We, therefore, expect