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Abstract

In this paper we attempt to examine the role of social inequality and status effects in driving trade between two countries which differ systematically only in terms of income-distribution using a status-driven model of consumption involving a status and a non-status good. Our model illustrates that when trade opens up, the country characterized by a higher level of inequality is likely to export the non-status good to the country characterized by a lower level of inequality, thus, establishing the extent of inequality as a determining factor behind comparative advantage.

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Introduction

Can social inequality drive international trade? Although there is a plethora of literature on how international trade may affect the income distribution of a country,[1] not much has been written on how social inequality may determine the pattern of international trade. This paper makes a first attempt to explore this issue by focusing particularly on *status effect* – the utility-impact of an individual's economic position in the society evaluated in terms of her own income *relative* to the average societal-income – that arise naturally in an 'unequal world'. To put differently, we intend to analyse the impact of social inequality on trade-pattern that might emerge in a world where individuals are motivated in their behaviour by a concern for social status.

In the past three decades many papers have been written exploring the linkages between status effects and microeconomic outcomes in a variety of contexts (see for example, Frank, 1985; Cooper et al., 2001; Arrow and Dasgupta, 2010; Moav and Neeman, 2010 and Marjit, 2010 among many others);[2] however, a simple theoretical model describing how social inequality and status effects may influence the pattern of international trade in a world in which every individual's utility is contingent upon her relative position in the society is hard to come by. This paper, thus, also seeks to integrate literature on status effects with traditional theory of international trade.

We begin by considering a pure-exchange world that comprises of two countries, North (N) and South (S), and two goods, status good (L) and non-status good (M).[3] To start with we assume that identical initial conditions characterize both the countries. That is, population size, preference pattern, price of each good, distributions of endowment (and income) and consequently, levels of social inequality are identical in both the countries initially. However, in country S, unlike country N, there is a benevolent government that re-distributes the total resources among all the individuals equally so as to wipe out social inequality. Assuming that preferences of every individual in our framework to be status-driven, we go on to derive the relative prices of the two commodities in question that prevails in countries N and S respectively so as to predict the pattern of trade – based on the doctrine of comparative advantage – that might emerge between these two countries which differ systematically *only* in terms of income distribution. Essentially, thus, we intend to examine whether the extent of inequality has a crucial role in determining the pattern of trade in a status-sensitive world.

Model

Let us begin by considering country N having a population of n individuals ($n \geq 2$). We assume that income distribution in the economy is such that every individual either earns 'high income' y_A or 'low income' y_B, $y_A > y_B$. As such, the economy consists of two homogeneous income groups – a high income group A and a low income group B, the size of

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[1] See Wolff (2000) and Harrison et al. (2010) for an excellent review of literature on trade and inequality.
[2] Haffetz and Frank (2010) provide an detailed survey of status related literature. Also see Clark et al. (2008) for a survey of related body of literature on relative income and happiness.
[3] We define status goods in line with Fred Hirsch's (1976) definition of positional goods as cited in Ireland (2001). According to this definition, positional or status goods refer to that class of goods, the consumption levels of which are observed and used to rank people in terms of social status (basically, items of conspicuous consumption). On the other hand, goods whose consumption levels are not important in ranking people in the society belong to the class of non-status goods.

the groups being denoted by n_A and n_B respectively, $n_A + n_B = n$. We assume that there is no production in the economy and that every individual has an exogenously given endowment of goods M and L. Let $\bar{M}_A, \bar{L}_A$ be the endowments of goods M and L possessed by every member of group A and $\bar{M}_B, \bar{L}_B$ be the same possessed by each member of group B. As such, the income-endowment equations are

$$y_A = p_M \bar{M}_A + \bar{L}_A \tag{1}$$

$$y_B = p_M \bar{M}_B + \bar{L}_B \tag{2}$$

where p_M is the relative price of good M.

Since in our framework, an individual's income is completely determined by the value of endowments, $y_A > y_B$ implies that individuals belonging to group must A possess greater endowments of at least one of the two commodities compared to individuals belonging to group B. We assume that $y_A > y_B \Rightarrow \bar{M}_A > \bar{M}_B$ as well as $\bar{L}_A > \bar{L}_B$ and also that the following relations hold:

$$n_A \bar{M}_A = \theta_1 (n_B \bar{M}_B) \tag{3}$$

$$n_A \bar{L}_A = \theta_2 (n_B \bar{L}_B) \tag{4}$$

For simplicity we assume $n_A = n_B = n/2$. As such, $\theta_1 > 1$ and $\theta_2 > 1$.

Let us now describe the demand side of the economy. Following Frank (1985) and Marjit (2010), we posit that in our model, preferences of individuals are influenced by their relative position in the society or by their relative social status s. More specifically, we assume that in our model, all individuals have Cobb-Douglas preferences over the consumption of goods M and L represented by the utility function $U(M_i, L_i)$, the structure of which essentially depends on s which is defined as

$$s = y_i / \bar{y}$$

where y_i is the income of an individual belonging to the ith class ($i = A, B$) and $\bar{y}$ is the mean income of the society given by $\frac{y_A + y_B}{2}$.

In order to describe how perceived social inequality and consequent status effects affects individual welfare in our model, we make the following assumptions.

Assumption 1: *Inequality hurts*
This implies that having below the average income in a society reduces individual utility. Our assumption will be that being above does not matter, but being below definitely hurts. This asymmetry is deliberate to highlight the implications of belonging to the downside of inequality.

Assumption 2: *Inequality increases marginal rate of substitution of L for M*[4]
Having lower than average income increases the marginal rate of substitution of L for M. That is, people with lower than average income wants to give up more of M for consuming an extra unit of L than those whose income is above the average. This is directly drawn from the

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[4] We define the marginal rate of substitution of L for M as the number of units of commodity M that must be given up in exchange for an extra unit of commodity L so that the consumer maintains the same level of satisfaction.

experimental social psychology literature where intensity of desire to consume the status good seems to be greater among those who are psychologically affected by social inequality (Sivanathan and Petit, 2010).

Based on these assumptions, we invoke the following log linear utility function to represent preference of a typical individual belonging to the ith income group

$$U(M_i, L_i) = \delta[\log M_i + \phi \log L_i] \tag{5}$$

We put the following restrictions on δ and ϕ:

$$\delta \begin{cases} = 1 & \text{for } s > 1 \\ < 1 & \text{for } s < 1 \end{cases} \tag{6}$$

(follows directly from assumption 1).

$$\phi \begin{cases} = 1 & \text{for } s > 1 \\ > 1 & \text{for } s < 1 \end{cases} \tag{7}$$

(follows directly from assumption 2).

Further, for inequality to hurt in equilibrium, $\delta\phi < 1$.[5]

The demand functions obtained by maximizing (5) subject to the ordinary income budget constraint $y_i = p_M M_i + L_i$ are as follows

$$\widetilde{M}_i = \begin{cases} \dfrac{y_i}{2p_M} & \text{for } i = A \\ \dfrac{y_i}{(1+\phi)p_M} & \text{for } i = B \end{cases} \tag{8}$$

$$\widetilde{L}_i = \begin{cases} \dfrac{y_i}{2} & \text{for } i = A \\ \dfrac{\phi y_i}{(1+\phi)} & \text{for } i = B \end{cases} \tag{9}$$

The excess demand equations for goods M and L is are as follows

$$\psi_M(p_M) = \frac{n}{2}\widetilde{M}_A + \frac{n}{2}\widetilde{M}_B - \frac{n}{2}\overline{M}_A - \frac{n}{2}\overline{M}_B \tag{10}$$

$$\psi_L(p_M) = \frac{n}{2}\widetilde{L}_A + \frac{n}{2}\widetilde{L}_B - \frac{n}{2}\overline{L}_A - \frac{n}{2}\overline{L}_B \tag{11}$$

Using equations (1) to (4) and setting either (10) or (11) equal to zero (since in equilibrium markets clear for both goods) and solving for p_M, we get

$$p_M = \frac{\overline{L}_B\left(\frac{1}{1+\phi}+\frac{\theta 2}{2}\right)}{\overline{M}_B\left(\frac{\phi}{1+\phi}+\frac{\theta 1}{2}\right)} \tag{12}$$

This is the equilibrium relative price of good M that would prevail in country N.

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[5] If inequality hurts in equilibrium, $\delta[\log\widetilde{M}_B + \phi\log\widetilde{L}_B] - [\log\widetilde{M}_A + \log\widetilde{L}_A] < 0$. Since $\log\widetilde{M}_B < \log\widetilde{M}_A$ (and hence, $\delta\log\widetilde{M}_B < \log\widetilde{M}_A$) and $\log\widetilde{L}_B > \log\widetilde{L}_A$ (see (8) and (9)), for inequality to hurt $\delta\phi < 1$. Note that an implicit assumption here is that log values of the demand functions are strictly positive. Hence we must assume that $y_i > max\{(1 + \phi), (1 + \phi)p_M\}$.

Country S has exactly the same initial supply-demand conditions as that of country N except that in S there a benevolent government which intends to wipe out social inequality by re-distributing resources among all n individuals so as to make $y_A = y_B = \hat{y}$ where $\hat{y}$ is the income of an individual after re-distribution. Essentially thus the government distributes $\frac{n}{2}\bar{M}_B(\theta_1 - 1)$ of good M and $\frac{n}{2}\bar{L}_B(\theta_2 - 1)$ of good L equally among n individuals. Following re-distribution, therefore, each member of the population of country S has $\bar{M}_B + \frac{1}{2}\bar{M}_B(\theta_1 - 1)$ of good M and $\bar{L}_B + \frac{1}{2}\bar{L}_B(\theta_2 - 1)$ of good L. Consequently, in country S, following re-distribution $s_i = 1 \; \forall i \Rightarrow \delta = \phi = 1$. Under such conditions utility maximization yields the following demand functions

$$\tilde{M}_i' = \frac{\hat{y}}{2p_M} \; \forall i \tag{13}$$

$$\tilde{L}_i' = \frac{\hat{y}}{2} \; \forall i \tag{14}$$

where

$$\hat{y} = p_M \left\{ \bar{M}_B + \frac{1}{2}\bar{M}_B(\theta_1 - 1) \right\} + \left\{ \bar{L}_B + \frac{1}{2}\bar{L}_B(\theta_2 - 1) \right\}. \tag{15}$$

The excess demand functions for goods M and L are given by

$$\psi_M'(p_M) = n\tilde{M}_i' - n\left\{ \bar{M}_B + \frac{1}{2}\bar{M}_B(\theta_1 - 1) \right\} \tag{16}$$

$$\psi_L'(p_M) = n\tilde{L}_i' - n\left\{ \bar{L}_B + \frac{1}{2}\bar{L}_B(\theta_2 - 1) \right\} \tag{17}$$

Using (15) and setting either (16) or (17) equal to zero and solving for p_M as before, we obtain relative equilibrium price of good M prevailing in country S, where re-distribution takes place, as

$$p_M' = \frac{\bar{L}_B\left(\frac{1}{2} + \frac{\theta_2}{2}\right)}{\bar{M}_B\left(\frac{1}{2} + \frac{\theta_1}{2}\right)} \tag{18}$$

In order to compare (12) and (18), we subtract (12) from (18) and simple manipulation yields

$$p_M' - p_M = \frac{1}{2}\left(\frac{\phi}{1+\phi} - \frac{1}{1+\phi}\right) + \frac{\theta_1}{2}\left(\frac{1}{2} - \frac{1}{1+\phi}\right) + \frac{\theta_2}{2}\left(\frac{\phi}{1+\phi} - \frac{1}{2}\right) > 0, \text{ as } \phi > 1 \tag{19}$$

which implies

$$p_M' > p_M.$$

This means that relative price of non-status good is higher in country S compared to country N. Therefore, following the doctrine of comparative advantage, if trade opens up, country N, which is characterized by social inequality, will export the non-status good to country S, in which there is no social inequality following re-distribution of resources, and will import the status good from it.[6]

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[6] It is evident that re-distribution policy of the government of country S has a vital role in our model. Had the government not re-distributed the resources to erase social inequality (and hence status effects), no trade would have taken place between the countries N and S.

Conclusion

The objective of this paper was to explore how inequality and consequent status effects may influence international trade in a world in which individuals care about their relative position in the society. Towards that end, we constructed a simple pure exchange model involving two countries, with identical initial conditions, and two goods, a status good and a non-status good. We, however, assumed that in one of the countries the government re-distributes resources among every individual so as to bring about social equality. Our model shows that, when trade opens up, the country that is characterized by inequality will end up exporting the non-status good to the country in which all individuals are 'equal' and will be importing the status good from it. Clearly, this is a direct outcome of the asymmetry deliberately introduced in our model through characterizing the two countries by differential degrees of social inequality.

The simple model constructed thus clearly illustrates how social inequality and consequent status effects may drive trade in a status-concerned world. We observe that status-driven trade, while on one hand, is likely to flood the relatively more unequal country with status goods, there may occur a dearth of non-status good in that country. Consequently, the relative price of the non-status good will tend to rise. This in fact is a reason for grave concern. Since, the class of non-status goods include necessary items such as nutrition good, the low income people's capability to procure such goods is likely to get severely damaged following a rise in price. As such, it might so happen that the low income people (of the country characterized by inequality) who of course were not 'eating' as much as the high income people but perhaps were 'eating enough to survive', might eventually end up 'starving', thus, getting trapped in hunger-based poverty trap[7] as a result of status-driven trade.

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[7] See Banerjee and Duflo (2011) for a detailed discussion on hunger-based poverty traps.