Justification of Potential Trade Variables

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Abstract. Trade is a fundamental part of all economic and development efforts, national economic growth, industrialization and technological knowledge. The benefits of trade are countless. Therefore, it is an important issue for policy makers and economist that how trade volume could be enhanced and which variable would be incorporated in the model of trade for the estimation of trade flows. In this study, we endeavor to make rationalization for the variable which seems to be central in this perspective. We get good reasons for Gross domestic product, distance, population, GDP per capita differential, real exchange rate, foreign currency reserves and several other qualitative variables to be incorporated in the trade models in order to estimate the trade volumes.

Keywords: Trade, GDP, Distance, Religion, Population.etc.

1. Introduction

Until recently, Trade is playing a pivotal role in total development effort and national growth of an economy. It is a vital instrument for industrialization and source for the dissemination of the technological knowledge, ideas, skills, managerial talents and entrepreneurship. International trade get good reward due to many benefits it has presented to different economies across the world .It accounts for increasing gross domestic products ,investment and one of the vital source of revenue. With the help of modern production techniques, transportation system and rapid industrialization trade is growing and spreading swiftly.

The greatest challenge to new research about the issue of trade is, to find conceptually distinct measures of trade that better explains, how to approach trade enhancing factor. In this study, we will attempt to explore and make justification for the trade variable which may be proficient in the determination of trade flows.

1.1 Gross Domestic Product (GDP)

GDP is a measure which corroborates that international trade is strongly affected by the trading partner's income. Larger countries by economic size tend to have bilateral trade surpluses with smaller ones. GDP represents production capacity, size of market and dimension of the demand potentiality of the trading partners. A high level of income in the exporting country indicates a high level of production which increases availability of goods for exports and more likely to achieve economies of scale. She also possesses large domestic markets which is able to absorb more import. The larger economic size of trading partners indicates the greater volume of trade that one would expect to observe because larger countries account for a larger share of world income and consumption. There are two standard ways of measuring the size of countries: GDP (output) and population. The product of GDP serves as a proxy for the two countries economic size; therefore, an increase in the product of the two country's GDPs is expected to increase trade volumes.

1.2 Transport and Transactions Costs

Usually transport and transaction costs are captured by the physical distance between two countries. The distance variable indicates the trade barriers impact of transportation costs. Costs increasing the trade frictions and reducing the amount of trade observed; the greater the friction, the higher will be the proportion of given expenditure that goes on costs rather than the good itself and the smaller will be the incentives for

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trade. Distance is a proxy of trade costs; home bias, time and search cost, and also capture the information cost.

Transaction costs are introduced as a wedge between the price that a good sells for in a foreign market and the price the domestic producer receives for that good .[1] models three types of transactions costs: tariffs and other trade barriers, transport costs and information costs. Distance is more prominent among all other transaction costs, as transport costs increase with an increase in the distance between regions, and the greater are the transaction costs the lower will be the supply of goods to foreign markets.

Distance is almost always measured using the "great circle" formula. This formula approximates the shape of the earth as a sphere and calculates the minimum distance along the surface. To calculate great circle distances one needs the longitude and latitude of the capital or "economic center" of each economy in the study. The study of Head (2003) suggests the following formula to obtain the distance measure in miles:

$$D_{ij} = 3962.6 \arccos\left(\left[\sin\left(y_i\right)\sin\left(y_j\right)\right] + \left[\cos\left(y_i\right)\cos\left(y_j\right)\cos\left(x_i - x_j\right)\right]\right)$$

Where X is longitude in degrees multiplied by 57.3 to convert it to radians and Y is latitude multiplied by -57.3 (assuming it is measured in degrees west). [2]

The distance variable is a trade resistance factor represents barriers such as delivery time, cultural unfamiliarity and market access. Most of the previous literature interpreted the coefficient of distance variable as the elasticity of trade with respect to an absolute geographical distance. The distance coefficient measures the effect of relative distances of countries: However, the sign of the distance coefficient cannot be predicted in advance. If the sign is estimated to be positive, it indicates that the market can be expected to be dominated by a home market effect as explained by [3].A positive value of the coefficient of distance also indicates that trade with geographically distant countries increase relative to trade with geographically closer countries. However, we anticipate that this coefficient is typically negative.

There are problems with this variable, such as the implicit assumptions that overland transport costs are same as that of oversea and all overland/oversea distances are equally costly. Another difficulty with standard measure of economic distance is the common assumption that the capital city, or any other single point in the country, is a useful proxy for the economic center. This may be useful only for small countries with one major city.

1.3 Population
Recipient and exporting country's population is as an additional determinant of trade. Population is used as a measure of country size. Generally the coefficient for the recipient country population is expected to be positive, since the bigger markets in the recipient country are expected to demand more goods. Population in the exporting country is also expected to have positive effects on exports, it is expected that it can produce and supply more as the population grows in size. On the other hand, a population variable can also indicate that a country with a large population size has a minimum efficient scale and less motivation in international trade, relative to a small country.

The coefficient estimates for population of the exporters may be negatively or positively signed [4], depending on whether the country exports less when it is big (absorption effect) or whether a big country exports more than a small country (economies of scale). The coefficient of the importer population also has an ambiguous sign, for a similar reason.

Another factor that may influence the coefficient estimates for the population is the composition effect that influences supply and demand. Each country produces and exports a different mix of commodities (supply) and the mix of goods demanded may also different for each country.

1.4 Per Capita GDP Differential
Per capita GDP differential measures the difference in term of relative factor endowments between two countries. It takes a minimum value of zero when there is equality in relative factor endowments and vice versa. The larger is this difference, the higher will be the volume of inter-industry trade and lower will be the share of the intra-industry trade. Intra-industry trade is boosted by similarity of trading nations. It may lead to

cost-free adjustments, increased efficiency and welfare gains associated with variety. The share of intra-industry in bilateral trade flows is larger for countries with similar incomes per capita or similar characteristics in general; it indicates the similarity of factors endowment and is in favor of Linder hypothesis.(which describe specialization occurs within sectors and consumers get benefits from the resulting increased range of products available). The similar the demand structures of two countries, the more intensive will be the potential trade between them. According to [5], bilateral trade will be larger if the per capita GDP differential of the trading countries is more similar.

The [6], theory predicts that the volume of trade should increase with increasingly equal distribution of national income. This, however, contradicts the traditional Hecksher-Ohlin theories of trade that predict that countries with dissimilar levels of output will trade more than countries with similar levels. In addition, the Linder hypothesis says that countries with similar levels of per capita income will have similar preferences and similar but differentiated products, and thus will trade more with each other. The Linder hypothesis is associated with the prediction that the absolute value of the difference of the two variables will have a negative effect on trade. A positive value of this falls in the category of Hecksher – Ohlin theories.

To distinguish among these influences - Hecksher-Ohlin style factor endowments differences, Linder –style taste differences, and the effect of development on trade and in an attempt to capture the distinctive features of each, measure of the difference in per capita GDP in the standard formulation can be used. A negative sign on this term would support the Linder hypothesis, while a positive sign would support the Hecksher-Ohlin hypothesis.

1.5 Real Exchange Rate

Real exchange rate is defined as depreciation (appreciation) of the home currency relative to foreign currency. This variable indicates that price competitiveness is important. Depreciation of the exporter currency raises exports conditional upon the elasticity of demand (Marshall Learner condition). Real exchange rate acts as a proxy for prices. The real exchange rate is computed as local currency per unit of foreign currency adjusted for domestic and foreign inflation. The effect of currency appreciation is twofold; Firstly, exports would be instantaneously become more expensive secondly, imports become cheaper.

According to the Marshall Learner condition the elasticity of exports and imports determine the final effect of depreciation on trade. The effect of real exchange rates on total trade flow will be positive (negative) if the export component of the total trade is significantly larger than the imports component. We expect that positive effects of an increase in real exchange rates on exports will dominate negative impacts on import. As a result, its influence on total trades is expected to be positive.

1.6 Foreign Currency Reserves

A foreign currency reserve is an important variable for trade measurement as it depicts the economic strength of a country. The higher level of a country's reserves, the more easily it can pay for its trade deficits. If a country has a larger amount of foreign currency reserve than it means it is in a position to face sudden unexpected fluctuation in trade balances. Foreign currency reserves appear to be increased the export demand. This variable may simply represent primarily the accumulation of current and previous trade flows and exchange rate policies of a country. We expect that greater the level of foreign currency reserves the more will be trade. Thus, the sign in the corresponding regression is expected to be positive.

1.7 Trade Openness

Trade/GDP ratio is used as a proxy for trade openness of a country.   Greater the share of trade in the GDP (Gross domestic product) of a country, the more its GDP depends on trade volume. It depicts that a country is more interested to generate its resources through outwards trading relations with other countries and strive to make policies which enhance the level of bilateral trade volumes by facilitating the trade relations and reducing the trade impediments. Consequently, greater the trade/GDP ratio of a country the more will be the trade volume. Thus, the sign of the corresponding regression is expected to be positive.

1.8 Adjacency

A dummy variable is usually introduced to identify a pair of countries that are adjacent or contiguous or share a land or sea border. This dummy is in addition to the inclusion of the distance variable, to account for the possibility of centre-to-centre distance overstating the effective distance between neighboring countries, which may often engage in large volume of border trade. The dummy variable is unity if countries share a common border and 0 when they do not. The extent of trade flows between countries may increase if countries share a land border. Neighboring countries undertake significant additional amount of international trade. A great deal of trade may occur from people crossing the border to make everyday purchases. Thus, the sign of the corresponding variable on trade is expected to be positive.

1.9 Common Language

Common language is meant to capture the cultural and historical similarities between the trading pairs, which are considered to be, increased the volume of trade. The role of cultural affinities is proxied by a common language dummy. The common language dummy has a value equal to one when both countries speak the same official language. It is meant to capture similarity in cultural and historical backgrounds between trading countries.

Major barrier to trade is difficulty in communication, because people in different countries in general speak different languages. Thus, exchange of goods may be impeded by costs associated with surmounting language barriers.[8]demonstrates that the greater the proportion of the population that speaks common language as either a first or a second language, the higher will be the volume of trade. Common language is a determining factor in the ability to realize the potential benefits, from networking and to use the knowledge effectively, to understand tastes and markets to promote trade and commerce. It reduces transaction costs and increases the volume of trade. Transaction costs arise from the lack of knowledge that a person from one country has about the laws, customs, tastes, and riskiness of markets in another country. Obtaining such information will result in a larger trade volume. Common language is expected to reduce transaction costs as speaking the same language help in facilitating the trade negotiations, the trading partners will have more knowledge of each other's culture and will find it easier to communicate and share information. It is expected that it will have a positive effect on trade volume.

2. Landlocked

This variable usually captures the transport cost margins in trade and ultimately cross-country productivity differences. Land and air transport of bulk goods is often more expensive than water transport [9]. Countries pairs with a large combined surface area and a landlocked economy incur high transport costs while island nations incur lower transport costs. Access to water appears to be important for trade flows.

The negative coefficient on the landlocked dummy can be interpreted as an indication that ocean transportation is significantly cheaper. [7] Showed that whether or not the exporter is landlocked, does not influence trade flows, whereas a landlocked importer experiences lower trade; this asymmetry is hard to interpret.

2.1 Religion

Religion can also have relevance in determining the trade volumes. Countries having the same religion have a natural inclination towards each other as they have same traditional roots, and cultural similarities. They are likely to have similar demand structure as they have same dogmas and beliefs, and same occasion and events to be celebrate. The effect of this variable can be captured by a dummy variable expected to have a positive sign for trade regression.

2.2 Common Colony

The dummy designed for common colony takes the value of one, if the home country and target country were ex-colony of a same state, and zero otherwise. This variable infers that if target country and home country are common ex-colonies than trade flows would be expected more among these countries because these countries have same historical background, problems and same foreign transferred culture. Most of the features of these countries are similar since they have had strong common cultural impacts of their ruler

country. These countries have cultural resemblance and, hence, expected more trade volumes between themselves.

2.3   Regional Trade Agreement (RTA)

Countries joined the RTAs usually have the intention to facilitate the bilateral trade between them. A dummy variable is introduced to capture its effects. It takes value equal to one when both countries in a given pair belong to the same regional group and 0 otherwise. The estimated coefficient will then approximates; how much of trade can be attributed to a special regional Trading agreement. Regional trade agreements are also considered as preferential trading arrangements because countries belonging to the same regional block of agreement always give special preference to their regional countries comparatively other countries of the world in all trade matters.

3. Conclusion

This study seeks a plain and brief review of the variables which are considered to be imperative in the determination of trade flow. Until recently, the basic idea of trade is based on the simple assumption that each country specializes in the production of those commodity which it can produce cheaper and exchange a part of it with others for the commodities which they can provide at a lower cost. Moreover, it can be alleged that trade is not a mere exchange of goods and services across borders, it is in fact interchange of different ideas, norms, concepts, customs, and life styles. This study thus examines the role of variables that recount the basic concept of trade. These variables comprised of country size, developmental level of a country, factor of production availability and abundance, heritage, culture, political history; etc.

Universally used potential variable that can be attributed to explain the bilateral trade pattern between countries can be modified as Gross domestic product(GDP), Transport and Transaction cost (distance variable),Population, Per capita GDP differential(H-O-H or Linder hypothesis), Real Exchange rate, Foreign currency reserves, Trade openness(GDP/Trade), Adjacency, Common Language , Landlocked, Religion, Common Colony, Regional trade Agreement ;etc. Whatever model specification is used for trade determination, integrating the defined variable might help to scrutinize the situation and trade dimensions of a specific country

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