Protection and Export Insurance: the Identification and the Measurement of International Trade Risks

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Abstract

International trade risk is a complex political and economic phenomenon. Good understanding of this risk is a necessary condition to be able to deal with it. The taxonomy and the analysis provided in this paper is aimed at helping decision makers to identify the sources of international trade risk, and to manage it as a part of the financial management of the firm. The classification of the risks enables the manager to use the appropriate instruments to reduce, or eliminate different types of risks. For example, political risk should be insured by those agencies who are involved in its creation, while regular economic risks can be dealt with by the market.

1. Introduction

Recent developments in international trade can be characterized by two processes: trade is becoming a more important economic factor to small and large countries alike, and the level of risk associated with trade is increasing. Not only that international trade is becoming more risky, in a way that is expounded later, but the cost associated with this risk is also becoming more substantial. This is so because as international trade assumed a larger proportion of the world's GNP, the risk associated with this segment of the economy becomes more costly. The cost is measured in comparison to a comparable system of world trade with a lower level of risk.

Markets do respond to risks that matter. Often the response takes the form of creating financial instruments and institutional arrangements to manage and to reduce the risk. A number of recent developments in the financial markets of the world, and in the agencies which provide coverage serve as evidence that this is the case with regard to international trade risk. Yet, a better understanding of the sources of what is referred to as international trade risk, and their associated costs may contribute to the design of better arrangements and instruments. This is particularly relevant with regard to risks arise from protectionist policies. As protection, and at least some form of export insurance are various facets of governments' policies, we have a situation where both the risk and the source of the insurance are originating

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from the same general system. In a broad sense this is a political risk. It is not unique for international trade, but it is more prevalent and important in a world then in a domestic setting.

The purpose of this paper is to provide an understanding of the nature of the risk associated with international trade. An understanding and a way to estimate the risk is of particular importance to companies, government agencies, and private financial institutions who provide insurance to international trade transactions. To the insuring agency trade transactions are streams of uncertain future cash-flows. In order to provide sound insurance to such transactions they should be able to evaluate and price these streams of uncertain cash-flow. As always in finance the evaluation and the subsequent pricing rests on understanding the risk.

The risk associated with international trade is a part of what is also known as international transfer risk. In the second section of the paper a taxonomy of the various facets of international transfer risk is presented. The emphasis is on the identification of the nature of a particular risk category, rather than on the question what to do about it.

Given the taxonomy, the different distributive effects of the various types of international transfer risk are presented and analyzed in section three of the paper. The distributive effects can serve as indicators for policy makers where, if at all, there is a proper role for government intervention. (Maybe in the form of a government or other public sector agency.)

Following the taxonomy and the analysis of the distributive effects of the different facets of the risk associated with international trade, international trade policy is examined as a source for risk. "Across the board" and industry specific policies are discussed, the resulting risks are identified and estimated in relation to a specific case. This very casual empiricism, presented in section four, is useful in providing a sense for the identification and measurement issues facing researchers, policy makers and business people.

The paper ends with some suggestions for further research in the field of international transfer risk, particularly applied research of use to those agencies who deal with the insurance of international trade risk.

2. The many faces of international trade risk

The risk associated with international trade can be broadly divided into three categories: risks which will exist in a perfect market environment, risks resulting from the interplay of political and economic factors within the existing system, and risks associated with a major change in the current economic and political system. These broad categories of risk are not independent of each other or all inclusive. Many observed phenomena contain elements of two or more of the classes of international transfer risk. The term international transfer risk is used here to indicate a process of transfer of resources among national states.¹

The first class of risk is a part and parcel of any economic and financial system. The market has developed efficient financial instruments to allocate this type of risk among investors. Modern finance theory deals with this type of risk via the paradigm of the Capital Asset Pricing Model, (CPAM), which postulates an equilibrium linear relationship between risk and return. Far from being disruptive, this type of risk is necessary for the functioning of a profit motivated economic system. Without different levels of risk, the expected return on all securities will, in equilibrium, be the same.

¹ The term international transfer risk was coined by Lessard (1974).

Risks of this class can be often described as random processes, they are based on continuous small changes, and they are symmetrical around the expected value of the distribution of future possible values. Statistically they are often evaluated on the basis of mathematical models like Brownian motion and log normal distribution.

Business risks are the prime example of this class of risks. The demand for, or the supply for a given internationally traded good, service, or a factor of production may change at any given point of time. The resulting market prices may change, as well as quantities and sources of supply. International trade is particularly sensitive to volatility in the exchange rates. Normal daily, and even more so hourly changes in the exchange rates may, and do follow this model. (See for example Agmon and Amihud, (1981), and Cornel and Dietrich, (1978).)

All these risks should be left to the market. Those who want to avoid the risk will find many ways to transfer these risks to others. Those who seek higher return will assume the risk, and will be compensated fairly on the average, and in the long run.

The second class of risk is characterized by an implicit or an explicit intervention by one or more than one government. These risks reflect the political power structure both in the domestic and international arenas. By definition these risks are "man made". As such they may be eliminated by the same agencies which generate the risks in the first place. This however, is a wishful thinking. The nature of the national state is such that in the struggle between "pure" economic and political considerations the latter will have at least equal weight. The nature of the political system brings about discontinuities. The discontinuities in price changes as a result of political interventions makes it impossible to describe price changes over time by a smooth process like the random walk. More important, unlike the economic and financial risk, this class of political risk does not represent a higher expected return. Indeed, it is a "dead wood" cost to the system. The market finds it hard to deal with this type of risk due to its source. As was shown by Merton (1976) and others, discontinuities and jump processes makes it difficult to apply pricing mechanisms based on the CAPM and similar equilibrium models.

A possible way of dealing with this problem is by adapting a fiscal approach. Given this approach, political risk is viewed as a tax. The cost associated with the tax is the reduction of the present values of a given economic activity as a result of the political risk. Political risk is a wasteful tax. It is a friction tax, rather than a transfer from one group of the economy to another group. The government can compensate some sectors in the economy by paying them back in the form of insurance at below market rate, insurance against political events which the market finds impossible to insure, or by financial subsidies. Such a policy which many governments follow, creates distributive problems. These problems are discussed in the following section.

The third class of risks associated with international trade risks has to do with a change in the political and economic system. This is an extreme case of the political risks discussed above. In that case the governments are viewed as creating barriers within the existing economic system. The third type of risk is the risk that the basic system will change in a way which will make all the common expectations basis inoperative.

To use a statistical metaphor, economic and financial risk is described by a well define normal distribution which can be summarized by two parameters. The introduction of political risk in the form of governments' interventions within the current economic system is similar to the introduction of jump processes and discontinuities into the process which generates the

normal distribution. The “change of system” risk is like moving to a completely different distribution with unknown general form and parameters. This type of risk is also known as a “catastrophic risk”.

3. The distributive effect of international trade risk

The three classes of risks described and analyzed above differ in their managerial implications both for the business entities involved, and to the insurers. They also differ in their macro implications. The macro considerations are important because most countries in the world regard their external trade as an issue of national importance. In addition to that, when public sectors insurers are involved macro considerations are relevant.

The first class of risk has no particular distributive effects. It is true that in the long run, and on average those who are willing to assume more risk will command more wealth, but this is consistent with the major behavioral assumptions of the neo classical economic model. The situation is markedly different when the second class of risks is concerned.

The political struggle for more resources through trade policy has been described in the “rent seeking group” model. (This idea were developed by Krueger (1974) and extended by Brock and Magee (1978). It has been applied to political risk by Agmon (1985).) The political power groups are seeking to affect the distribution of income in their favor. One common way to achieve favorable changes in income distribution is by protectionist trade policy. The development of the U.S. trade policy since 1960 provides ample evidence for the frequency and the variety of ways by which the U.S. government has practiced protectionist policy. As protectionist policy is often contradictory to common economic sense it tends to be fairly unstable. As a result the final distributive effects are not clear. This uncertainty is a real cost to the economies involved. To the extent that insurance arrangements can reduce the uncertainty, they may contribute to a more stable distribution of income.

A change in the economic system may have far reaching consequences. For example the demise of the multilateral trade system and it replacement by a series of bilateral agreements will bring a rearrangement of the industrial structure in many countries, and an obvious change in the distribution of income in all countries involved.

In general, high level of political risk directs more income to those who know how to manage political systems to their benefit. In most cases the resulting distribution of income among the different sectors of the economy will not favor the comparative advantage of the country under consideration. This is so because the cash-flows received by the various sectors and industries in the economy reflects the internal comparative advantage in managing the political system as much as the international comparative advantage. The two types of comparative advantages seldom coincide. At least some of the many instance of what is known as intra industry trade relates to government intervention in comparative advantage. (On this point see Agmon, (1985).)

4. Some stylized case studies

In a recent paper by Canto and Dietrich, they document nine cases of across the board trade restrictions initiated by the U.S. in the period 1962 - 1981. At the same time the U.S. has initiated twenty seven industry specific trade restrictions. All this was done in a period where

the official policy was one of free trade, expressed by the GATT and the GSP agreements. The across the board measures provide the framework of uncertainty due to their inconsistency with the free trade basic policy. The potential for industry specific measures increases the risk associated with the cash-flows of specific enterprises. The introduction of possible counter measures by the affected countries increases the uncertainty even further.

To illustrate this process assume that a U.K. exporter of capital goods used for the production and assembly of electronic goods is seeking insurance for a five years sale to a Korean firm. The U.K. exporter owns a stream of future payments. The export insurance agency has to evaluate this risky stream of cash-flows, and determine its risk adjusted present value as a basis for the insurance decision.

In order to estimate the risk, the various facets of the risk have to be analyzed. The ability of the Korean buyer to pay depends firstly on market conditions in the target market for its products, the U.S., as well as in the inputs market, Korea. This is corresponding to the first class of the international trade risk. This is a normal commercial risk, and there are many financial instruments, technique and institutions to deal with it. The ability to pay depends also on the across the board trade policy in the U.S. As was pointed out by Canto and Dietrich, the probability of restrictive measures is positively correlated with macro economic problems in the U.S., like trade deficit or a general unemployment. The effect of across the board measures is less detrimental to the present value of the Korean project than industry specific measures like "voluntary restraints", countervailing duties and such like. Those tend to be related to problems in specific industries in the U.S., and to the political power of those affected. This last risk factor is an example of a politically generated risk.

Risk analysis is a necessary first step but not a sufficient one. The analysis should be followed by an estimation. One possible way to estimate the risk is by employing a scenario analysis based on the pioneering work by Hertz, (1968). Given this approach, the resulting cash-flows of the Korean manufacturer, conditional on a set of market conditions in the U.S., across the board trade policies in the U.S., and a specific industry and product trade policies are postulated. Each event is assigned a probability, and the expected value of the cash-flows is calculated. Although this is a vast simplification, it still capture some of the major elements of the risk.

Another possibility is to estimate the revenue function as a multifactor function as follows:

$$R_{it} = b_1 W_t + b_2 C_{kt} + b_3 I_{jt} + U_{it}$$

Where:

R_{it} = revenue generated by project i at period t .

W_t = is the world factor at period t .

I_{jt} = is the industry j factor at period t . ($j=1,2,...,J$).

C_{kt} = is the country k factor at period t . ($k=1,2,...,K$).

U_{it} = is the residual which represents the specific firm risk. b_1 , b_2 , and b_3 are the relating coefficients.

Such a function can be estimated on the basis of a cross section data. The risk components associated with the world status, prosperity or depression, and the industry status reflect the economic risk. The country factor reflects the politically generated risk, and the residual U_{it} reflects the firm specific risk. (May be poor management.) It is interesting to note that in a

number of studies of what is known as the international asset pricing model, (IAPM), it has been found that the country factor is more pronounced than the industry or the world factors. (See Agmon (1973), and Lessard (1974).)

Given a body of data on the return, or the revenues, of a number of firms such an estimation can be carried out. Like any other estimation of this sort it is not precise in an absolute sense. What can be reasonably expected is a sense for the relative importance of the various factors, and their contribution to the risk in terms of the variability of the return, or the revenues.

5. Summary and suggestions for further research

International trade risk was presented in this paper as a complex phenomenon. It includes normal business risks and politically generated risks. This is a normal situation with regard to any economic activity. What makes international trade risk different is the presumably high proportion of politically motivated risk, the ability to track this risk through the analysis of trade policies, and the existence of specific agencies and corporations to insure, or manage this risk.

This paper is a first step toward better international trade risk management. As such it deals for the most part with definitions and structuring the problem. What is needed now is an empirical examination and estimation of the various types of risks discussed in this paper. This can be done on the basis of the data accumulated by the export insurance agencies and corporations. Given the empirical analysis, there is a need for new financial instruments and institutional arrangements to manage the risk. The design of such instruments and arrangements can benefit from continuing research in this field.

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