

Resolving Possible Tensions in ASEAN's Future Trade

Using "Analytic Hierarchy Process"

Iwan J. Azis

The article stipulates potential new conflicts between the Association of Southeast Asian Nations (ASEAN) and some trading partners due to allegations of "social dumping" and "eco dumping" that are seemingly unrelated to economic and trading matters but potentially can overcast the region's stable economies and buoyant trade performance. The nature and intensity of such conflicts are described in a quantitative manner by applying the Analytic Hierarchy Process (AHP) in a non-zero sum game framework. Subsequently, a number of alternative conditions within the context of dynamic games are explored. It is shown that a conflict resolution in terms of equilibrium co-operative solution can still be attained if policy makers are of a non-myopic type. When information asymmetry and element of uncertainty are taken into account, the article shows that ASEAN will be in a relatively better position.

1. Introduction

The remarkable achievement of rapid ASEAN growth in the past decades occurred with a stagnant — not increasing — intra-ASEAN trade. This was concurrent with a tremendous increase in trade with non-ASEAN countries. The guiding premise of the member countries has been always to promote growth and employment through improved competitiveness in global markets, not preferential access to other members. It is recognized that excessive preoccupation with facilitating intraregional trade can divert attention from global trade liberalization.

The strong economic performance of the region has been generally supported by conducive macroeconomic policies, while the strong growth

in trade was primarily due to the region's outward-looking policy regimes. In this respect, however, ASEAN member states are a mixed bag. Singapore has gone through a long experience of export-oriented industrialization, that is since the 1960s, while Malaysia, the Philippines, and Thailand began implementing such a policy in the early 1970s. Indonesia, starting in the 1980s, is a latecomer. This, along with other factors (for example country size, stage of development, historical background) shaped the policy environment in each country, suggesting different degrees of openness and unequal levels of reliance on pro-market policies. Consequently, a number of interventionist policies still remain in some countries. These "national policies" are, from time to

time, viewed by the region's trading partners, especially the "traditional markets" of the United States and in Europe, as another — and in some cases even more — protectionistic measures. Tensions have therefore occasionally emerged. Such resulting tensions, however, remain in the categories of economy and trade.

But in recent years, the domestic and national policies complained about by some developed countries pertain to issues only partially related to economic and trading matters, for example human rights, unfair labour practices ("social dumping"), and environmental matters ("eco dumping"). These issues are not at the heart of the GATT-WTO agenda. Hence, disputing these issues and linking them with trade policy seem rather odd, and often frustrates some countries in the region.

The focus of this article is to shed some light, in a *quantitative* manner, on potential new types of tensions or conflicts that may overcast the region's stable economies and buoyant trade performance. By applying the *Analytic Hierarchy Process* (AHP) in a non-zero sum game situation, it is shown that a number of outcomes, including the current non-equilibrium state, can be generated. Assessing these outcomes is necessary if some resolution to the conflicts are to be proposed. A number of alternative resolutions are therefore explored in this article, by way of some game-theoretic procedures.

2. Trade and New Tensions: Shaping the Framework of Analysis

In practically all member countries of ASEAN, rationalization of economic policies has taken place in response to various external shocks during the 1980s. The changes have generally been towards outward-looking strategies and limits of import substitution. Indeed, trade policy has been one of the most notable areas of change. It is imperative, however, that most trade has taken place not with other members. The relative size of intra-ASEAN trade during the early 1990s was not much different from that in the 1980s, that is around less than 20 per cent for ASEAN-6 or less than 5 per cent when the entrepôt

Singapore is not counted.¹

Until the mid-1980s, roughly half of the ASEAN trade took place with the "traditional market", that is Japan, EEC and the United States, mostly through imports of machinery and equipment, and through exports of raw materials and increasingly of manufactured products. Even taking into account the increasing share of the ASEAN trade with the Asian NIEs, the "traditional market" still represents more than 50 per cent by the early 1990s.²

This suggests that trade between the ASEAN and the non-ASEAN countries (that is a more global trade) remains very important to the region. In this respect, joint ASEAN action to settle a variety of issues in multilateral negotiations, international commodity agreements, and the global system of trade preferences is always considered important by the Association. It is in this area that an arrangement such as the Asia Pacific Economic Co-operation (APEC) could be utilized as a forum for collective efforts by ASEAN to foster non-discriminatory trade co-operation.³

The use of the Preferential Trading Arrangement (PTA) mechanism since its inception more than a decade ago was ineffective, mostly due to lack of political will. The new promotional effort, announced in the 1992 Summit, however, has demonstrated the opposite: a strong political will to form a free trade area (the ASEAN Free Trade Area or AFTA) through a Common Effective Preferential Trade (CEPT) scheme within 15 years.⁴ Can we then expect the swelling of intra-ASEAN trade under the scheme? Those who are very optimistic — but risking the neglect of possible cost of trade diversion — tend to see the formation of a full-fledged free trade area as an inescapable path for the region. A more realistic view is to expect AFTA to become a cohesive and effective arrangement to tackle a broad agenda of regional trade and investment liberalization. AFTA can be an effective vehicle to demonstrate the vastness of the potential market provided by an area that will likely include a population of some 300 million, which, on average, is in a "middle income group" category. Prospective foreign investors can also enjoy a broad range of

labour categories (from the lowest paid Indonesian labour to the highly productive labour in Singapore) and of factor endowments in the region.

The remarkable growth achievement with prudent macroeconomic policy, and the rapid structural change of the region, should make the aim of attracting further foreign investment more feasible. Whether this will eventually create the impetus for further intra-ASEAN trade, should *not* be an imposed condition.⁵ Forcing trade to take place among countries, for whatever reasons, is likely to raise the costs of trade diversion. It is always important to note that ASEAN countries have experienced remarkable economic progress through successful involvement in the international trade via policy regimes whereby unilateral and non-discriminatory reduction of trade barriers with the rest of the world were fostered. It is widely recognized by policy makers in the region that an excessive preoccupation with facilitating intraregional trade will divert attention from global trade liberalization, which, in the end could be detrimental to the ASEAN economies. The interest of ASEAN should thus be to balance the efforts to enhance intra- and extraregional links.

But it is precisely the conduct of such efforts that will not get easier in the coming years, primarily because new types of conflicts are likely to emerge. The repeat of ASEAN's thriving extraregional trade is not always fully assured, even when the external-oriented strategy has been unanimously adopted by member countries, and is likely to remain so in the coming years. The inferences, unfortunately, have become increasingly multidimensional. Tougher competition in a global market is probably the most often quoted reason in this regard. Then, a slow improvement, if any, in the region's total factor productivity, as purported by Paul Krugman's famous claim in his *Foreign Affairs*' article, is another reason for caution.⁶

Yet, there is a new factor that can potentially lead to a deteriorating economic (and political) relationship between ASEAN countries and their trading partners. This factor originates from complaints raised by a number of developed countries

(DCs) pertaining to issues only partially related to economic matters, such as human rights, unfair labour practices (known as "social dumping" or "social correctness"), and environmental matters ("eco dumping"). Despite efforts by some DCs, the United States and other industrial countries in particular, to include these issues in the WTO agenda, they are *not*, and *never were* at the heart of GATT multilateral agreements. It is in this respect a number of developing countries in GATT, including ASEAN members, are appalled. Some accuse, for example, the DCs' claim to raise labour standards in other countries to be motivated by DCs' increased unemployment and the desire to blame the problem on exploitation of workers by their trading partners. It is not surprising that while ASEAN, along with many developing countries, see the worldwide signing of the GATT Round as very positive, the DCs' attitudes towards the Round tend to be more defensive.

It is usually argued that tension can emerge when activities in a particular country generate spill-over effects upon others.⁷ In other words, externalities of various sorts can lead to a conflict situation. Notable examples of sources of externalities are: forest degradation, air pollution, global warming, and labour immigration. More specifically for ASEAN, for example, it is no secret that criticisms pertaining to forest degradation have been directed towards Malaysia and Indonesia. While forest depletion has increasingly become a major concern not only for local people and local NGOs (non-government organizations) but also for government and policy makers alike, as indicated by continuous improvements of policies and increased awareness of the peoples in these countries towards environmental standards, it seems odd that the argument put forth by DCs often refers to the compulsion to safeguard the global environment (ozone layer), the present quality of which has been thoroughly affected by DCs' past production and present consumption.

It is not unlikely in the years to come that different environmental issues in other ASEAN countries will be brought up by the region's trading partners into the trade policy debate. Yet, bringing environmental issues into such debates is

even more bizarre. Trade is not, and never has been, the cause of environmental problems. Therefore, trade sanctions cannot and will not directly affect the root cause of such problems. The same applies to human-labour rights issues. ASEAN countries should make efforts to improve their local environments and human-labour rights conditions for their own sake (indeed, a lot more needs to be done in these areas), but not because they have to comply to demands made by trading partners.⁸

None the less, how do we deal with the potential new conflicts related to these social and environmental aspects? In order to grasp the nature of these conflicts, and eventually seek a resolution, an analysis based on the Analytic Hierarchy Process is conducted. The first step is to structure the problem on to a hierarchy. The following discussion describes the relevant elements, wherein underlined italic words are to become "objectives", "targets" and "strategies" in the hierarchy.

There are two constructed hierarchies, one for each player, that is ASEAN's trading partners (DCs) and ASEAN. Hence, some elements discussed below belong to DCs and some are attached to ASEAN. On the basis of past experience described earlier, it is very likely that in the coming years ASEAN countries will proceed with their *Economic Reform and Trade Liberalization (TRA)* strategy. Efforts to remove trade and investment barriers in all member countries that have been taken so far, be it through regional arrangements such as APEC and AFTA, or through unilateral decisions consistent with the GATT's multilateral trading arrangements, are the supporting evidence. It is quite obvious that the following targets will be closely related to this strategy: (1) *Market Access in DCs (Market)*; (2) *Strong Economic Growth (Growth)* and (3) *Improved Efficiency (Efficien)*.

To secure *Market Access in ASEAN (Market)* is also a relevant target for DCs. Among DCs' several targets, this is the most closely related to a *Healthy Economic Condition (Economic)* objective. However, there are two other specific objectives based upon which DCs' targets are

determined. The following discussion describes these objectives and their relationship with the targets of both DCs and ASEAN.

Like most countries, the ASEAN member countries firmly believe that concern for national competitiveness is one of the most important motives for trade. For some DCs, however, the motives could be wider, that is improving the competitiveness to global commons (for example ozone depletion, climate change, etc.), and in some cases even animal welfare (protecting endangered species). Even if these motives are not directly related to their trade policy, they are increasingly becoming parts of the DCs' overall goals. Hence, it is useful to place *Environmentally Sustainable Development/Global Common (Environm)* as one of the DCs' goals. With respect to the motive of gaining competitiveness, DCs have another important target that rests upon the premise that natural resource depletion, if done excessively, could dwindle the world supplies, pushing prices higher. In turn, this will affect the overall price situation in many resource-importing DCs. Hence, maintaining a *Stable Supply and Price of Environmental Resources (Resource)* is an important target for DCs.

In recent years, a different kind of tension, sparked by value conflicts, has also frustrated some ASEAN members as well as a number of developing countries. Such value conflicts can also create instability in the ASEAN trade by fueling what some analysts called "social dumping". Without any doubt this is the most difficult to reconcile since its link with economic and trading matters is even more nebulous. Unfortunately, it is this very issue that is likely to create more tensions in the coming years. A number of DCs insist that human-labour rights and trade ought to be linked. They believe that violation of these rights in ASEAN and other developing countries has caused "psychological externalities", against which *Unilateral Trade Sanctions and Other Protection Measures (PROT)* need to be imposed. On the other hand, ASEAN countries could react that while human-labour rights are indeed very important, and hence should be adhered to, they must be *delinked* from the trade policy debate.

simply because they are two very distinct subjects. If this attitude persists, then ASEAN will proceed to focus on a trade liberalization strategy (*TRA*). On the other hand, there is no reason why efforts to focus on the improvement of human-labour rights and environmental standards cannot be taken *along with* trade liberalization. Such a combined effort, labelled *Economic Reform, Trade Liberalization and Improve Human-Labour Rights and Environmental Standards (STR)*, can be to ASEAN's benefit, since it will improve the region's labour quality and overall living standards.

Linking human-labour rights and trade could be regarded by ASEAN as a reflection of the Western "export of ideology", which, if imposed in pluralistic, multi-ethnic, multi-religious states, can have a highly destabilizing impact. There is also the well-known debate about the principle of "universality". It later developed into arguments associated with two opposing views: one that sees the right to development as a prerequisite for realizing civil and political rights, as most ASEAN countries will contend, and the other (DCs) that believes the reverse. The latter tends to be adopted by DCs, who regard *Universal Value Compliance (Value)* as an important target to achieve, compatible with their *Overall Influence (Politica)* objective. ASEAN views on the principle of "universality" seems to be more *balanced*, congruent with those expressed by other Asian countries, the essence of which is best represented by the following statements made during the Asian gathering preceding the UN World Conference on Human Rights in 1993:⁹

... while human rights are universal in nature, they must be considered in the context of a dynamic process of international norm-setting, bearing in mind the significance of national and regional peculiarities and various historical, cultural, and religious backgrounds

DCs' complaints about labour practices generally rest upon a premise that lower costs of employing labour in ASEAN countries unfairly gives firms in these countries a competitive edge. It is against this inception that producers in DCs

would like to be protected, because such a practice is in contrast with one of DCs' targets to achieve *Fair Treatment in Production and Trade (Fair)*.

What implication will these different perspectives have on the economic and political relationships between ASEAN and their trading partners? At worst, the trade relations between them could be constantly threatened by a series of tensions, or, if tensions escalate, serious conflicts may occur. On the one hand, from past lessons ASEAN countries are very much concerned with regional political stability and security. Such stability has proven to be greatly advantageous to the region's economic growth and development. Hence, *Regional Stability (Stable)* is an important target for ASEAN. Any proposed resolution to a potential conflict would need to take this factor into account. On the other hand, DCs could take a more elegant approach, either by engaging in *Quiet Diplomacy for Improved Environment and Social Standards in LDCs (DIPL)*, as opposed to an "outspoken diplomacy" which could be alleged to be meddling in ASEAN's domestic affairs, or, if necessary, DCs could also submit their complaints via GATT-WTO; the latter would constitute a strategy to *Support GATT-WTO Rules (GATT)*. Actually, in the case of environmental complaints, Parts (b) and (g) of GATT's Article XX stipulate that trade restrictions are still allowed when they are deemed necessary to "protect human, animal, or plant life or health" and "the conservation of exhaustible natural resources". Hence, there is nothing in the GATT that prevents a country from adopting measures to offset environmental externalities. On the labour issues, however, there is more limited room to manoeuvre, since there is only a provision that allows contracting parties to exclude imports of goods produced with "prison labour" (Part (e) of Article XX). No mention is made on child labour and deprived workers, two issues that have become the "favourites" of some DCs.

To summarize, the different sets of objectives, targets and strategies of the two parties (ASEAN and DCs) are as follows:

ASEAN Countries

Targets

1. Market: Market Access in DCs
2. Growth: Strong Economic Growth
3. Efficiency: Improved Efficiency
4. Stable: Regional Stability

Strategies

1. TRA: Economic Reform and Trade Liberalization
2. STR: Economic Reform, Trade Liberalization and Improve Human-Labour Rights and Environmental Standards

Developed Countries (DCs)

Objectives

1. Economic: Strong Economic Growth
2. Politica: Overall Influence
3. Environm: Environmentally Sustainable Development/Global Commons

Targets

1. Market: Market Access in ASEAN
2. Fair: Fair Treatment in Production and Trade
3. Value: Universal Value Compliance
4. Resource: Stable Supply and Price of Environmental Resources

Strategies

1. DIPL: Quiet Diplomacy for Improved Environment and Social Standards in ASEAN.
2. GATT: Support GATT-WTO Rules
3. PROT: Unilateral Trade Sanction and Other Protection Measures

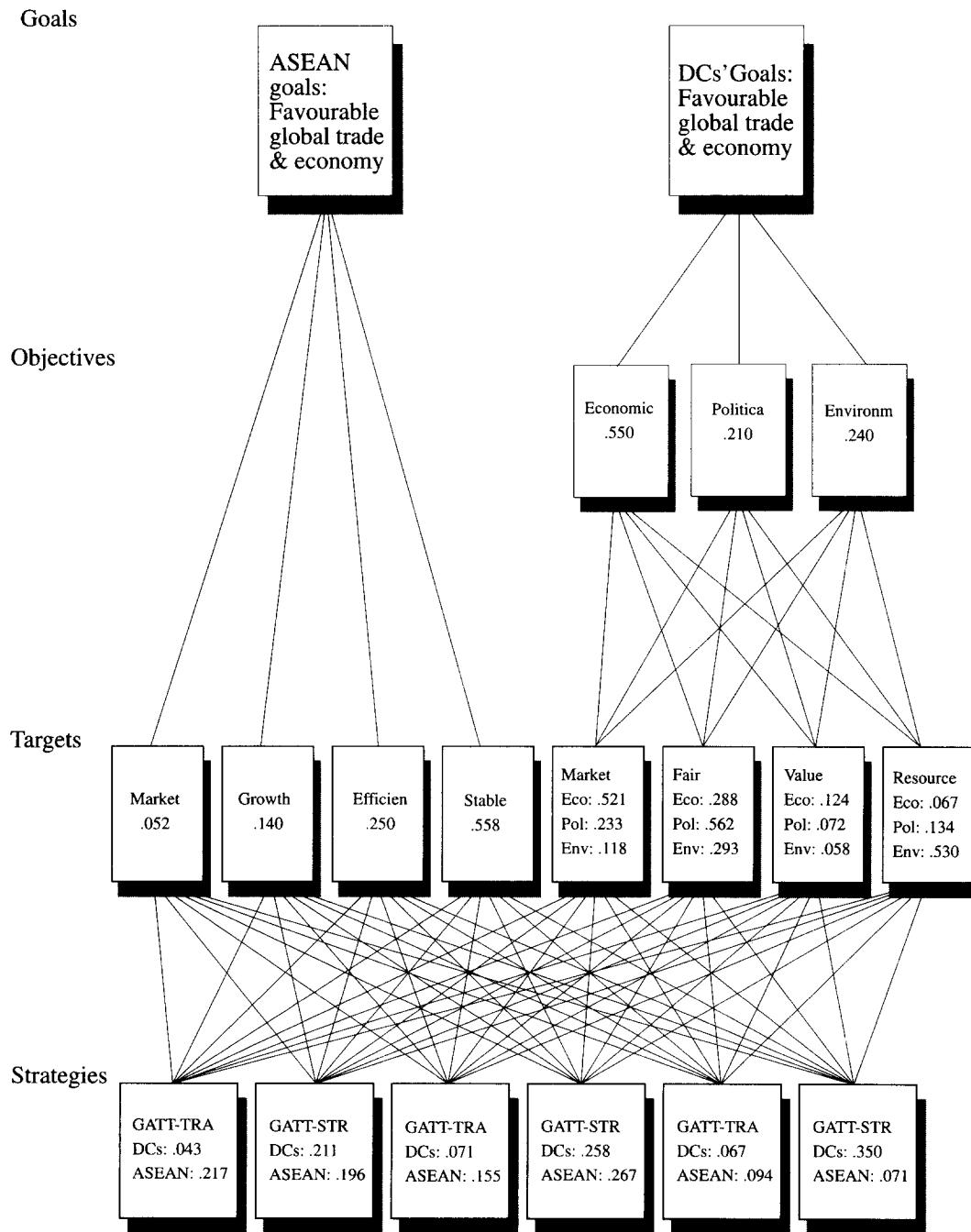
3. Assessing the Nature and Intensity of Conflicts

Figure 1 displays the two hierarchies (for DCs and ASEAN) with their corresponding joint strategies at the lowest level of the hierarchies. The calculation done in AHP is based on the ratio scale generated through pairwise comparison procedures (see the Appendix). After performing a series of pairwise comparisons between elements in each level of the hierarchy, and combining the results by way of matrix-vector multiplication, a global ranking reflecting the distributive mode of

the joint strategies is obtained. The top boxes in Figure 1 describe DCs and ASEAN's overall goals. In the case of DCs, the next level identifies the three sub-goals, or objectives, and their relative importance (reached by pairwise comparison) to achieving the overall goals. The next lower level indicates targets as previously discussed; there are four for ASEAN and four for DCs, with their relative importance — again, being obtained by pairwise comparison — listed for achieving their overall goals. Finally, at the bottom level we list the six joint strategies (1) DIPL-STR; (2) DIPL-TRA; (3) GATT-STR; (4) GATT-TRA; (5) PROT-STR; and (6) PROT-TRA. For the DCs, we list the relative importance of each joint strategy to achieve the four targets (as weighted), in turn to achieve the three subgoals (as weighted), in turn to achieve the DCs' overall goals in the top box. Similarly, calculations yield the relative importance of each joint strategy for ASEAN's overall goals.¹⁰ The resulting numbers from pairwise calculations for each level of the hierarchy are recorded in each box. Hence, for example, in the DCs' hierarchy the resulting rank of their objectives is: Economic (.550), Environm (.240) and Politica (.210).

The above procedure is standard in AHP, the basic mathematical exposition of which is shown in the appendix.¹¹ It is clear that the role of each player's perceptions is critical to the process of pairwise comparison from which the resulting rank is produced. The ranking in the ASEAN hierarchy used in the present study is based on what the author perceives as the likely position of ASEAN countries on each issue, whereas for the DCs the adopted rank mimics those obtained from a similar study dealing with the conflicts between developing and developed countries on the same issues, that is the encroachment of environmental and social issues into trade policy domain.¹² There is virtually no reason why we cannot alter the ranking for each player; "flexibility" is precisely one of the strong points of AHP. But as far as the ranking for ASEAN is concerned, it is the author's opinion that the presented ranking has suitably reflected the general perceptions among ASEAN countries on these issues.

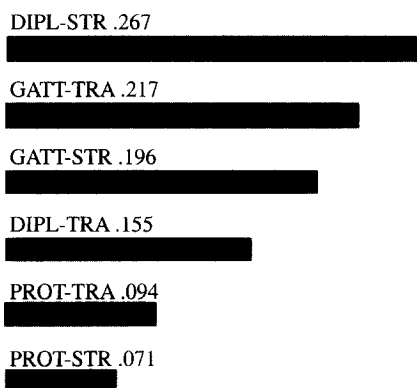
FIGURE 1
Non-Equilibrium



The following is the resulting distributive mode that reflects the global ranking of the joint strategies:

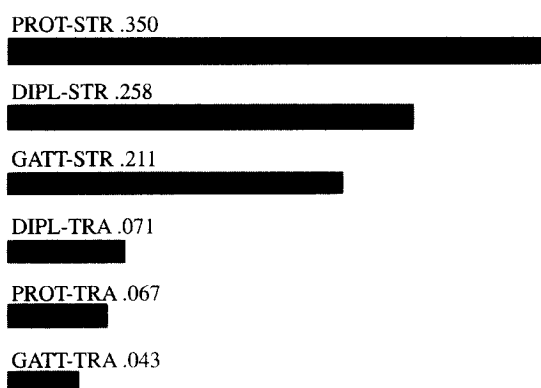
From the ASEAN's perspective:¹³

Overall Inconsistency Index = 0.10



and from the DC's perspective:

Overall Inconsistency Index = 0.08



Notice from Figure 1 that among the four targets ASEAN will likely put *Regional Stability (Stable)* as the highest priority (with the payoff of .558). It is no secret that for ASEAN such a stability has contributed significantly to their robust economic performance thus far. In light of "psychological externalities", it is not surprising

that the member countries tend to prefer a joint strategy whereby they will make some improvements in the social and environmental condition, while DCs engage in quiet diplomacy harmless to the maintenance of a peaceful environment. Such a scenario, denoted by "DIPL-STR", is reported in the above distributive mode (also depicted at the lowest level of the hierarchy for ASEAN).

Unfortunately, this is not necessarily the DCs' preferred choice. Having identified a set of strategies under the economic, political and environmental categories, the overall mode suggests that DCs would pick a joint strategy of countering ASEAN "unfair practices" with protection measures (*PROT*) with the expectation that ASEAN will seriously make an improvement in the human-labour rights and environmental standards. The resulting joint strategy is labelled "PROT-STR" in the DC's overall distributive mode (see also the lowest level of the DC's hierarchy in Figure 1). Hence, a conflict situation arises.

To discern the nature and intensity of the conflict, the two sets of priorities and their corresponding numbers, generated through pairwise comparisons, are recorded in a non-zero sum matrix (Figure 2). It is not difficult to observe that no equilibrium point in a Nash sense can be found under the present circumstances.¹⁴ What this means is that the trade situation between ASEAN and some DCs will likely be characterized by the two parties' constant struggle to cope with the plausible tensions described earlier. This may or may not hamper significantly the future trade scenario of the region, but one thing is certain: a thriving extraregional trade enjoyed in the past by ASEAN will not be fully assured in the coming years. Whether this will lead to an increased intra-ASEAN trade or the region's trade with other countries (Asian NIEs) is something that remains to be seen.

One may argue that the above conclusion has a limitation: that it is based on a *static* game situation. In a dynamic setting where the process of negotiation and repeated games are allowed, implying *non-myopic* players, a co-operative solution can probably be found. Indeed, by applying a number of game-theoretic approaches in this

FIGURE 2
ASEAN Versus DCs (Trading Partners)
Non-equilibrium Case

Developed Countries (DCs)

	<i>Quiet Diplomacy (DIPL)</i>	<i>Support GATT/WTO (GATT)</i>	<i>Trade Sanction (PROT)</i>
<i>Ec & Trade Lib, Human & Lab Rights & Env (STR)</i>	(.267; .258)	(.196; .211)	(.071; .350)
<i>Focus on Econ & Trade Liberalization (TRA)</i>	(.155; .071)	(.217; .043)	(.094; .067)

particular case (not reported here, due to space limitations), a co-operative solution turns out to be within reach, that is DIPL-STR, in which the payoffs for ASEAN and DCs would be .267 and .258 respectively.¹⁵

Nevertheless, the final outcome reported in Figure 2 is not the only scenario one can generate. While a co-operative solution seems likely with a non-myopic time-horizon,¹⁶ another scenario with different pay-off values can be generated by repeating the pairwise comparison procedure (AHP). Hence, the same procedures as before are repeated for each level in the hierarchy, but with different perceptions of ASEAN and its trading partners on the issues at hand. As an illustration, let's presume that this time, both ASEAN and DCs take a tougher stand. More specifically, a different ranking is made especially in the

pairwise comparison for LDCs' joint strategies under "Efficiency" and "Stability". Figure 3 is the resulting matrix.¹⁷

From the ASEAN standpoint, a joint strategy "PROT-TRA" is now preferred to "PROT-STR"; in other words, ASEAN is now more interested to focus on the economy and trade even if DCs take a tougher stand (protection or trade sanctions).¹⁸ A tougher ASEAN's stand may be well represented by the following remarks:¹⁹

We should not be listening to outside advice ...
We heard enough ... about democracy and human rights. We have been threatened with trade sanctions ... they have lectured us about how to manage our environment and conserve our forest ... the time has come for us to put across, candidly and honestly, our own viewpoints on these matters ... we (ASEAN) should be a credible force which others would need to reckon with ...

FIGURE 3
ASEAN Versus DCs (Trading Partners)
Tougher DCs and Tougher ASEAN

Developed Countries (DCs)

	<i>Quiet Diplomacy (DIPL)</i>	<i>Support GATT/WTO (GATT)</i>	<i>Trade Sanction (PROT)</i>
<i>Ec & Trade Lib, Human & Lab Rights & Env (STR)</i>	(.072; .257)	(.106; .191)	(.039; .366)
<i>Focus on Econ & Trade Liberalization (TRA)</i>	(.230; .065)	(.405; .040)	(.147; .080)

Similarly, in this scenario, DCs take a tougher stand by reversing the ranking of "DIPL-TRA" and "PROT-TRA", now favouring the latter, particularly with respect to "fairness" and "universal value compliance". It is not surprising that under such circumstances the Nash equilibrium is precisely the situation whereby DCs' protection collided with ASEAN's objection to what they perceive as external value imposition. No one would gain the highest payoffs from such a situation, but DCs will be in a more disadvantaged position (.080 is their third largest payoff, whereas .147 is ASEAN's second largest). Hence, when the two players take a tougher stand, they will both be "trapped" in "PROT-TRA" situation, under which ASEAN will still be able to reap a payoff of .147, instead of .230, while DCs' payoff would be lower, that is .080.

4. The Role of Information: "Signalling Game"

Information accessibility is often critical to the determination of equilibrium solutions. Generally, fuller and more reliable information on sensitive domestic issues like human and labour rights are more accessible in DCs than in many developing countries and ASEAN. In effect, ASEAN is actually in a position to acquire more information, that is of their own as well as of the DCs, while DCs have more limited information about ASEAN's sensitive issues; hence, there is *information asymmetry*.²⁰ Another element that realistically needs to be considered is *uncertainty*; especially that with respect to the "belief" one party has towards the quality or type of the other party, before and during the game.

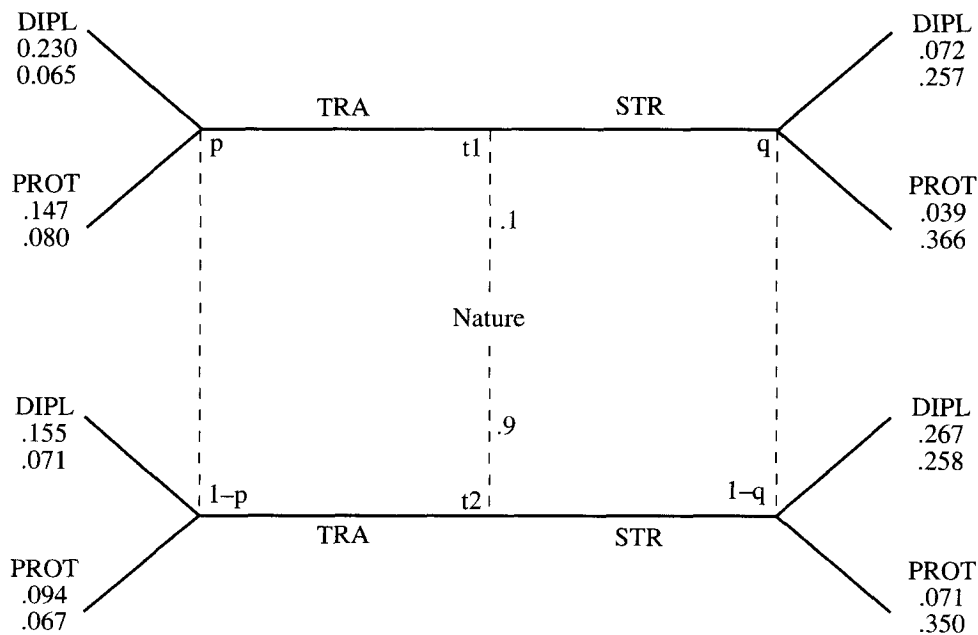
Incorporating those elements would require a procedure to model a *signalling game*. To the extent that there is indeed an asymmetry in information accessibility, ASEAN countries are more likely to act as the “sender”, in such a game. One of the most critical factors upon which the outcome will be determined is the type of “nature”, reflected through “prior” probability of the type of sender that receiver must face. Three scenarios of such prior probability are explored: 0.5, 0.1, and 0.9, that is, the second and the third values denote cases where nature has selected the probability of ASEAN having a “good” type is *lowest* and *highest*, respectively.²¹ For illustrative reasons, the payoffs from the matrices in Figures 2 and Figures 3 are combined in Figure 4 to form an extensive game, whereby in the upper side of the diagram both ASEAN and DCs are assumed to take tougher positions.

For this form of signalling game, multiplicity of equilibria is quite typical (Cho and Kreps

1987), and the influence of “posterior belief” is vital (Appendix, Section B), as the following discussion shows. With prior probabilities of ASEAN having “good” type, or t_2 , equal to 0.5 and 0.1, a combination of “PROT-TRA” is acquired: ASEAN countries get .147 and DCs acquire .080. This is similar to the perceived notion obtained from Figure 3, that is ASEAN insist on focusing on economic and trade reform, even if DCs take a tougher stand (protection or trade sanctions). Considering the possible North-South dimension involved, such an outcome could be followed by retaliatory and counter-retaliatory action that may lead to the undermining of an open global trading system (notice that the “continued economic and trade liberalization” scenario does not preclude discriminative policy against other parties).

When the prior is set to .9, “Quiet diplomacy” could remain a possible strategy for DCs, suggesting that DCs’ probability assessment towards ASEAN quality (“posterior distribution”) is

FIGURE 4
Signalling Game



revised. Interestingly enough, however, the equilibrium outcome is not "DIPL-STR," but rather "DIPL-TRA", that is DCs' payoff from engaging in quiet diplomacy is greater than that received from imposing trade sanctions (.071 > .067, see Figure 4) even if ASEAN takes a tough position. Using backward induction (Brams' Theory of Moves), the same solution is obtained under the condition that ASEAN takes the move first. This outcome is plausible given the fact that DCs, in the event of receiving a message that ASEAN is persistently focusing only on economic reform and trade liberalization, hold a "posterior" belief that they face a "good quality" group of countries.²² It is equilibrium because even when DCs are willing to engage in quiet diplomacy, ASEAN prefers to stay with their trade focus for they suspect that, having observed ASEAN's move to improvement, DCs might change their strategy to protection, that is the presence of distrust, in which case DCs will improve their payoff, but ASEAN would get .074 instead of .143.

5. Conclusions

Collectively, the ASEAN economic performance has been impressive: their economies doubled in size during the 1980s, inflation was low, and structural change took place at a rapid pace. These are some achievements unmatched by the rest of the world. The region's macroeconomic policy tends to be prudent, with flexible fiscal policy and monetary policy moves from regulation to open market operation. But nothing more dramatic than the region's success in export-oriented strategies, especially in Malaysia, Thailand, and, of course, Singapore. The remarkable achievement has occurred along with a low or stagnant trend, not an increasing one, of intra-ASEAN trade, and with tremendous increase in trade with non-member countries. It is only sensible, therefore, to expect that the region's dominant policy will remain focused on unilateral and non-discriminatory reductions of barriers to trade with the rest of the world. From this standpoint alone

one can be assured that AFTA is not likely to become a protectionistic trading arrangement. The region's driving concern is not preferential access to other member countries' markets, but to promote growth and employment through improved competitiveness in global markets.

However, new kinds of tensions, sparked by value conflicts and rigorously different perceptions towards some social and environmental issues, may impede ASEAN efforts to secure trade with "traditional markets", that is the United States and Europe, in the coming years. Such tensions have the potential of removing the assurance of a buoyant trade with these trading partners, even when all member countries have adopted the right kind of industrial-cum-trade policy.

This article elaborates on the nature and intensity of these potential new conflicts. A quantitative assessment is made by employing the Analytic Hierarchy Process, from which a consistent ranking of the components embedded in each issue is produced. The current scenario is shown likely to be not at an equilibrium state; yet, an equilibrium co-operative solution can still be attained when some procedures of dynamic games are applied, particularly when both players are of non-myopic types. Furthermore, an outcome showing ASEAN's persistent stand of focusing on economic and trade liberalization, without being "harassed" by allegations and protectionist threats from some trading partners about "social dumping", and "eco dumping", appears still plausible under the assumption of information asymmetry.

Given the ceaseless struggles of member countries to strengthen their competitiveness (to combat inflation and current account deficits), exploring such a scenario is useful. But to accomplish a co-operative solution in which an economic focus is commingled with efforts to improve social and environmental standards would be to ASEAN's own benefit, not because other countries demand so. As shown in the article, such a solution is an equilibrium, and within reach.

APPENDIX

A. Analytic Hierarchy Process:

Let $A_1, A_2, A_3, \dots, A_n$ be n elements in a level. The quantified judgments on pairs of elements (A_i, A_j) are represented by an n -by- n matrix $A = (a_{ij})$; $i, j = 1, 2, 3, \dots, n$. A set of numerical weights $w_1, w_2, w_3, \dots, w_n$ reflects the recorded quantified judgments. Hence, in paired comparisons:

$$A = \begin{matrix} & \begin{matrix} A_1 & A_2 & & & A_n \end{matrix} \\ \begin{matrix} A_1 \\ \vdots \\ A_n \end{matrix} & \left[\begin{array}{cccccc} w_1/w_1 & w_1/w_2 & \dots & \dots & w_1/w_n \\ \dots & \dots & \dots & \dots & \dots \\ w_n/w_1 & w_n/w_2 & \dots & \dots & w_n/w_n \end{array} \right] \end{matrix}$$

In terms of Figure 1, with respect to *Environm* for example, the four targets, A_1, A_2, A_3, A_4 , are compared pairwise. Since every row is a constant multiple of the first row, A has unit rank.

By multiplying A with the vector of weights w , one will have

$$Aw = nw \tag{1}$$

To recover the scale from the matrix of ratios, the following system of equations must be solved:

$$(A - nI)w = 0$$

Clearly, a non-trivial solution can be obtained if and only if $\det(A - nI)$, which is the *characteristic equation* of A , vanishes. Hence, n is an *eigenvalue* of A and w is the corresponding *eigenvector*. Because A has unit rank, all its eigenvalues except one are zero, and the only non-zero eigen value is consequently a maximum.

If each entry in A is denoted by a_{ij} , then $a_{ij} = 1/a_{ji}$ (reciprocal property) holds, and so does $a_{jk} = a_{ik} / a_{ij}$ (consistency property). By definition, $a_{ii} = a_{jj} = 1$. Therefore, if we are to rank n elements, and thus A is n -by- n , the required number of inputs (from the paired comparison) is equal to $(n^2 - n)/2$, since the reciprocals are forced. Thus, six judgments are needed to compare four elements (targets) in Figure 1.

In general case, the precise value of w_i/w_j is not given, simply because the input judgement is only an estimate of w_i/w_j . The a_{ij} may be regarded as perturbations of w_i/w_j . While the reciprocal property still holds, consistency does not. If we denote the largest eigenvalue by λ_{max} , then, by perturbation theorem (1) becomes:

$$Aw = \lambda_{max} \cdot w \tag{2}$$

where A is the actual, or the given, matrix perturbed from the matrix w_i/w_j . Despite the difference between (1) and (2), if w is obtained by solving (2), the matrix whose entries are w_i/w_j is still a consistent matrix; it is a consistent estimate of A , although A itself need not be consistent. Notice that A will be consistent if and only if $\lambda_{max} = n$. As long as the precise value of w_i/w_j cannot be given, which is common in the real case due to bias in the judgements, λ_{max} is always greater than, or equal to n . Hence, a measure of consistency can be derived based on the deviation of λ_{max} from n (the conditions for existence of an eigenvalue under a small perturbation, and for the stability of eigenvector, are shown in Saaty ([1994])).

The AHP uses a *consistency index (CI)*, which is equal to $(\lambda_{max} - n)/(n - 1)$. Comparing CI with the average *random index (RI)*, which is the consistency index calculated from a large sample of generated reciprocal matrices, one can form a *consistency ratio (CR)*, which is the ratio of CI to the average RI. This ratio can also be considered as the *overall inconsistency index*. The threshold point is usually $CR \leq 0.10$, which indicates a one-level or lower order of magnitude adjustment in the judgments.

When more than two elements are compared, the notion of consistency can be associated with the assumption of *transitivity*: if $A_1 \phi A_2$, and $A_2 \phi A_3$, then $A_1 \phi A_3$. It should be clear, that in solving for w , the transitivity assumption is not strictly required, because inconsistency may arrive from the lack of precise relations among the judgements even if they are transitive. Because the AHP allows for inconsistency, the judgments do not have to be fully

consistent; in fact, in addition to permitting some degree of inconsistency, another strong point of AHP is that it allows for rank reversal to occur when it is desirable for that to happen (Saaty 1994). Yet, as shown earlier, the resulting matrix and the corresponding vector remain consistent. It is the consistent vector w that reflects the priority ranking of the elements in each level of the hierarchy.

B. Notes on Signalling Game

Assuming two types of ASEAN quality, $t1, t2$, and the terms "message" $M=\{m1,m2\}$ refer to strategy, the signalling game can be formulated as follows: (1) Nature draws a type t for ASEAN from the set of feasible types $T=\{t1,t2\}$ according to a probability distribution ("prior," to be set exogenously); (2) ASEAN countries observe t and then choose a message m from the feasible set of messages $M=\{m1,m2\}$; (3) DCs observe m (but not t) and then choose a strategy a from the set of feasible strategies $A=\{a1,a2\}$; (4) Payoffs are given by $ULDC(t,m,a)$ and $UDC(t,m,a)$.

The following conjectures are related to the equilibrium notion: (1) given high "prior" probability $p(t1)$, DCs' belief $b(t1 \text{ given } m1)$, that is "posterior", will be high, (2) one of the perfect Bayesian equilibria will be [ASEAN: $t1 - m1$ & $t2 - m1$, DCs: $m1 - a1$ & $m2 - a1$], and (3) cooperative solution can be achieved.

NOTES

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1. One of the fundamental constraints to increasing the share of intra-ASEAN trade is the limited complementarity. Similarities in their economic structure and policies imply a competitive aspect in their economic relations.
2. The ANIEs' shares were 22 per cent and 18 per cent for export and import respectively.
3. It is no secret that one of the concerns raised by the North American Free Trade Agreement (NAFTA), for example, is the possible trade and investment diversion resulting from preferential market access granted to Mexico and potential new participants in NAFTA. Some ASEAN countries are also concerned with the potential discriminatory impact of future U.S. policies on non-participants in special trade arrangements. These are examples of issues that cohesively ASEAN could take up within the APEC forum.
4. In Chiang Mai, September 1994, however, the ASEAN economic ministers made a pledge to adopt a faster schedule for reducing trade barriers. Three schemes were proposed: first, is the "normal track" scheme, where tariff will be lowered to a threshold of 20 per cent by 1998 and 5 per cent in 2003 (five years earlier than the plan in the original AFTA proposal); second, is the so-called "fast track" products with the target of 5 per cent duty by the year 2000; third, products outside those two schemes are to be subject to tariff reductions on a gradual basis between 1995 and 2000. Interestingly enough, the meeting also indicated that a timetable for lowering tariffs on unprocessed farm goods is to be prepared.
5. There are, of course, some possibilities for increased intraregional trade. Putting a personal computer together, for example, can involve shipments among member countries.
6. P. Krugman, "The Myth of Asia's Miracle", *Foreign Affairs* 66, no. 6 (November 1994).
7. In contrast, different kinds of spill-over effects can be beneficial to the receiving end, for example, in the case of technology transfer.
8. Of course, rules listed in any multilateral environmental agreements that ASEAN countries have agreed to join must be also adhered to, even if such agreements have some trade provisions. An example of this category is the *Plant Protection Agreement for the South East Asia and Pacific Region* signed in 1956.
9. Listed in the 1993 Bangkok Declaration.
10. The relative importance of DCs and ASEAN's joint strategies will later appear as the numbers recorded in Matrix I, a non-zero sum matrix.
11. A long list of references on AHP, including those written in seven languages, can be found, among others, in T.L. Saaty, "Decision Making in Economic, Political, Social and Technological Environments With The Analytic Hierarchy Process", Vol VII, RWS Publications, 1994.
12. See I.J. Azis, "New Conflicts Between Developed and Developing Countries." *Peace Economics, Peace Science, and Public Policy* 3, no. 1 (1996).

13. See the appendix for the explanation on consistency index.
14. For the definition of Nash-equilibrium, see the appendix.
15. The list and results from applying game theoretic procedures applied in this case are available upon request. Elsewhere, the author has also demonstrated that in a conflict situation between developing and developed countries, applying these procedures yield, under certain assumptions, a co-operative solution; see I.J. Azis (1996), *op. cit.*
16. The author has also applied a backward induction process based on the *Theory of Moves* (see Brams 1994 and 1993) in this case, the result of which gives the same co-operative solution.
17. Taken from I.J. Azis (1996), *op. cit.*
18. Notice that similar to the case in Figure 2 here the "support GATT/WTO" is dominated by DCs' other two strategies as well.
19. Malaysian Prime Minister Mahathir's remarks made during the summit of ASEAN leaders in Bangkok, December 1995.
20. Some relate such a presumption with the degree of a society's openness (media censorship, rumours, etc.).
21. By "good" type we mean a quality of "sincerely striving for better economic, social, and environmental quality".
22. The U.S. Government recently contributed some US\$400,000 aid to Thailand to combat child labour, estimated between 4 and 5 million. In a game-theoretic framework, this would be the case of "side payments".

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