The World Trade Organization And Pakistan Economy

By
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Abstract

The objective of this paper is to get rationality about WTO and its effects on Pakistan economy. It is important in recognizing WTO relations in the field of International Trade, Economic Development, raising standards of living and optimal use of the World's resources in accordance with the objective of sustainable development. WTO is a step toward new economic order in International trade and Pakistan's Trade and whole economy must efficiently perform within the new system of WTO. The Government of Pakistan and whole region Governments needed to develop better linkages through more permanent set of relations to share better understanding to benefit from WTO and Trade Liberalization for the improved quality of life of the people and development.

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***wājib*:** unavoidable
yaqīn-e-kāzib*:** see ***jehl-e-murak´kab
yaqīn-e-sādiq: sound assurance
zann: presumption

Glossary

akhlāq: ethics
a'māl: plural of *amal*
amal: conduct
'aqā'id: plural of *'aqīdah*
'aqīdah: faith
batī '-ūl-e'tiqād: incredulous
būtoo'-ūl-e'tiqādī: incredulity
dalīl-e-qat'ī: definitive evidence
dalīl-e-zannī: conjectural or presumptive evidence
farḍ: obligatory
ghair-harām: lawful
ghair-ikh'tiārī: out of control
ghair-muttafaq-un- alaih: antonym of *muttafaq-un-alaih*
harām: unlawful
'ibādāt: *plural of 'ibādat*
'ibādat: worship
ikh'tiārī: under control
jehl-e-mūrak'kab: gross ignorance
makrooh-e-tahrīmī: unallowable
makrooh-e-tanzīhī: abominable
mū'āmalāt: plural of *mū'āmalah*
mū'āmalah: deal
mū'āsharat: way of living
mūbāh: permissible
mūs'tahab: desirable
sarī '-ūl-e'tiqād: credulous
shak: doubt
sūr'at-ūl-e'tiqādī: credulity
tajassūs: curiousity
takhay'yūl: imagination
taqlīd: conformity
wahm: hallucination

(4.1) one of the hypotheses is makrooh, then the hypothesis makrooh will be accepted.

(4.2) one of the hypotheses is mūbāh and the other one is mūs´tahab, then the hypothesis mūs´tahab will be accepted.

Although, our initial goal was to investigate whether the deed is *mūbāh, mūs'tahab,* or *makrooh,* which can be achieved after receiving some more evidence. The sets *{mūs'tahab}* and *{makrooh}* are the only two among the different alternatives, which are singleton. Since from the previous section, it can be observed that:

(1) Bel*({ makrooh })* > Bel*({ mūs'tahab })* and,
(2) Bel*({not makrooh })* = Bel*({ not mūs'tahab })* = 0.

Moreover, Bel*(makrooh)* > *50%,* therefore it can be concluded that the deed is more likely to be *makrooh*
In general, if there is:

(1) insufficient evidence for both X and Y, i.e., $0 \leq Bel(X) < 0.5$ and $0 \leq Bel(Y) < 0.5$,
then neither X will be accepted nor Y.

(2) sufficient evidence for either X or Y, i.e., either
(i) $0 \leq Bel(X) \leq 0.5$ and $0.5 < Bel(Y) \leq 1$, or
(ii) $0 \leq Bel(Y) \leq 0.5$ and $0.5 < Bel(X) \leq 1$,
then the proposition having sufficient evidence will be accepted.

(3) 50 % evidence for both X and Y, i.e., Bel(X) = Bel(Y)=0.5 and evidence against X and Y are different, then the hypothesis, against which the evidence is lesser will be accepted.

(4) 50 % evidence for both X and Y, i.e., Bel(X) = Bel(Y)=0.5 and evidence against both are same, i.e., Bel(~X) = Bel(~Y) and if

Their belief interval is given by:
[Bel(H),Pl(H)] = [a,1], where 0. 5 < a ≤ 1 and Bel(~H) = 0 (see figure 14)

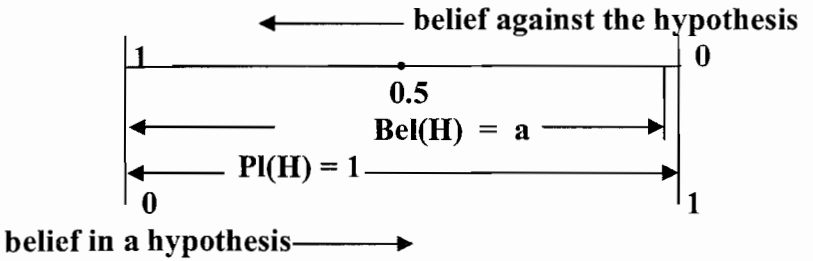

Figure 14: belief interval for mūhaddisīn

Their behaviour was rational i.e., they were neither credulous nor incredulous. Their degree of belief 'a', in the authenticity of a narration was greater than 50% and was closed to 1 in most of the cases. Their degree of belief against the authenticity of the narration was almost zero and their ignorance '1-a' was also very closed to zero. Moreover, as they acquired authentic evidence, so their degree of belief approached to sound assurance.

11. Decision based on Evidence

In the previous section, the use of Dempster-Shafer theory of evidence and the Dempster's rule of combination enable us at the first step to get different alternatives of beliefs, after receiving some evidence. These approaches allow the narrowing and revision of such beliefs in the light of more evidence, but suppose after reaching at the current situation, our goal is now only to decide what to accept among the two alternatives *{mūs'tahab}* and *{makrooh}*.

belief in ~H reduces and therefore in consequence, the plausibility, 1-Bel(~H), reduces.

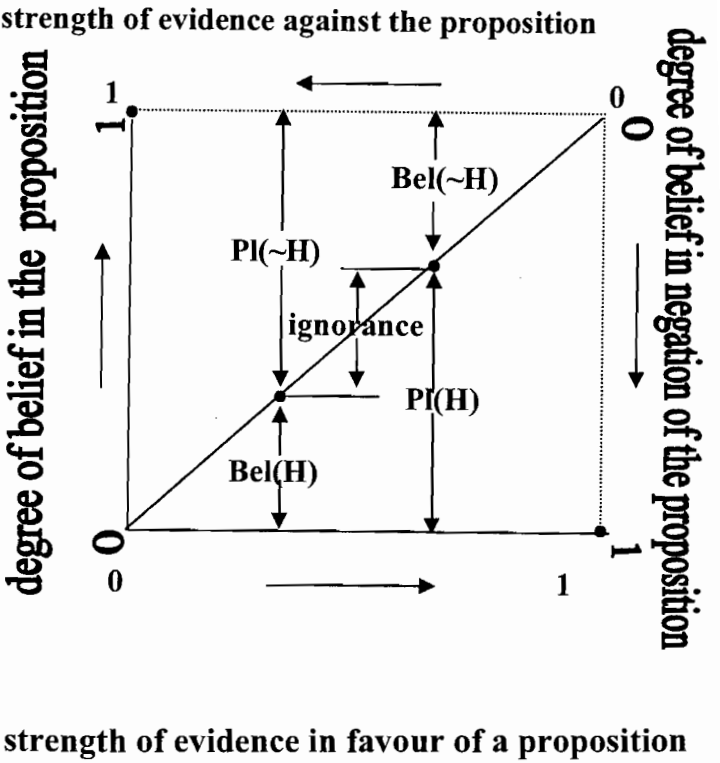

Figure 13: A linear relationship between 'strength of evidence' and 'belief together with plausibility and ignorance'

Mūhaddisīn dealt 'strength of evidence' very carefully while confirming the authenticity of a narration. This was so as they were very cautious about 'quality of evidence' (*sahīh, hasan, za'īf, mau'zoo'* etc.) as well as about 'quantity of evidence' (*mūtawātar, mashhoor, 'azīz, gharīb* etc.)

authentic or unauthentic. If certain evidence supports a truth or is against an untruth then it is authentic. On the other hand, if it supports an untruth or is against a truth, then it is unauthentic. Authentic evidence, with 100% strength, leads to sound assurance, provided the confidence in the evidence is 100% and is invariant.

Unauthentic evidence with 100% strength leads to gross ignorance provided the confidence in the evidence is 100% and is invariant.

Authentic or unauthentic evidence with 100% strength leads to conformity provided the confidence in the evidence is 100% but variant.

Since belief depends on evidence, therefore the belief interval

[Bel(H), Pl(H)] (see figure 13)

may vary when some more evidence is received, that causes an increase in Bel(H). But the interval may also vary in the sense that Bel(H) may reduce. This is so because if some of the evidences in favour of H, among those that are used to form the given interval, is unauthentic and when someone comes to know the fact about such evidences, his belief in H reduces and therefore in consequence, the ignorance, Pl(H)-Bel(H), reduces.

Similarly, if some of the evidences against H, among those that are used to form the given interval, is unauthentic and when he comes to know the fact about such evidences, his

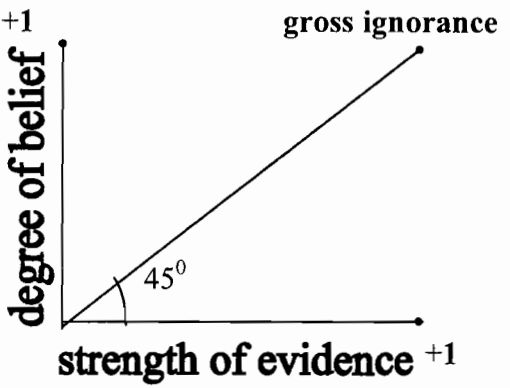

Figure 12: A linear relationship between degree of belief and strength of evidence that leads to gross ignorance. The relationship is for unauthentic evidence, although it shows a rational behaviour

(**Note:** for non-linear relationships, there are so many paths to reach the sound assurance or gross ignorance)

The behaviour of a person at a point is either rational or irrational. The behaviour is rational if MPB =1 at that point while for MPB ≠ 1, his behaviour is either credulity (*sūr'at-ūl-e'tiqādī*) or incredulity (*būtoo'-ūl-e'tiqādī*). A person with MPB <1,on some interval, is incredulous (*batī'-ūl-e'tiqād*) at that interval i.e. he believes a little for too much strength of evidence in the interval while a person with MPB >1, on some interval, is credulous (*sarī'-ūl-e'tiqād*) at that interval i.e. he believes too much for a little strength of evidence in the interval.

Although belief depends on evidence but evidence is also needed to believe, i.e. belief and evidence are implicit functions. This is so, because evidence may be either

MPB = increase in degree of belief / increase in strength of evidence
or,

$$MPB = d(\text{degree of belief})/d(\text{strength of evidence})$$

It represents the slope of the linear curve (figure 11 or 12) and typically, it is expected to be unity for a rational person. Different persons behave differently with the strength of evidence. Some believe a little for too much strength of evidence while others believe too much for a little strength of evidence.

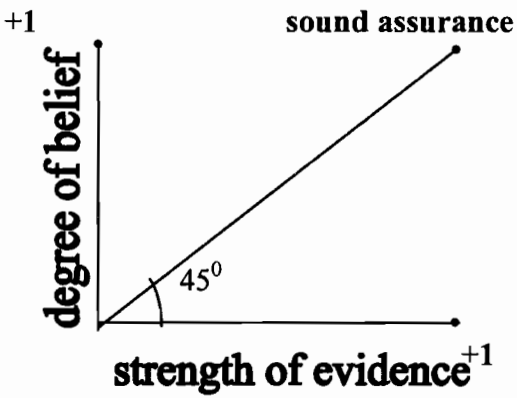

Figure 11: A linear relationship between degree of belief and strength of evidence that leads to sound assurance. The relationship is for authentic evidence and it shows a rational behaviour throughout (MPB=1 at each point)

(a) there is such an amount of evidence in favour of *{makrooh }* that causes the belief in *{makrooh }* or Bel (*{ makrooh }*) = 0.6

(b) since the value of Pl(*{makrooh }*)= 1, therefore Bel(Not (*{ makrooh }*)) = 1– Pl(*{ makrooh }*) = 0 which shows that there is no evidence against *{makrooh }*

(c)Pl(X) – Bel(X) = 1 – 0.6 = 0.4, showing 40% ignorance about *{ makrooh }*

These belief intervals provide different alternatives of belief that are helpful while making a decision about how to act on a belief.

Now, degree of belief is a function,

degree of belief: strength of evidence → [0,1]

The strength of evidence is the product of sufficient quantity of evidence and quality of evidence; that is,

strength of evidence = sufficient quantity of evidence × quality of evidence.

It lies in the closed interval [0,1].

The sufficient quantity of evidence and the quality of evidence are fuzzy and therefore a degree of membership is required for each to define.

Any increase in strength of evidence causes an increase in degree of belief. The proportion, or fraction, of any increase in strength of evidence, which is believed is called the marginal propensity to believe (MPB) Or, alternatively stated, the MPB is the ratio of an increase in degree of belief to the increase in strength of evidence which brought the strength of belief increase about; that is,

$Bel_2 \oplus Bel_3(\{m\bar{u}s'tahab, makrooh\}) = 0.36 + 0.6 = 0.96$
$Pl_2 \oplus Pl_3(\{m\bar{u}s'tahab, makrooh\}) = 0.36 + 0.6 + 0.04 = 1$

$Bel_1 \oplus Bel_3(\{ makrooh \}) = 0.55$
$Pl_1 \oplus Pl_3(\{ makrooh \}) = 0.55 + 0.36 = 0.91$

$Bel_1 \oplus Bel_3(\{ m\bar{u}s'tahab, m\bar{u}b\bar{a}h \}) = 0.09$
$Pl_1 \oplus Pl_3(\{ m\bar{u}s'tahab, m\bar{u}b\bar{a}h \}) = 0.09 + 0.36 = 0.45$

Finally, above values lead to form different belief intervals e.g., the belief interval for
{ mūs'tahab } is:
$[Bel_1 \oplus Bel_2 (\{ m\bar{u}s'tahab \}), Pl_1 \oplus Pl_2(\{ m\bar{u}s'tahab \})] = [0.18,1]$
and the belief interval for *{makrooh }* is:
$[Bel_2 \oplus Bel_3 (\{makrooh \}), Pl_2 \oplus Pl_3 (\{makrooh \})] = [0.6,1]$
From the two intervals, it is observed that:
$Bel(\{ makrooh \}) > Bel(\{ m\bar{u}s'tahab \})$

The belief interval of *{ mūs'tahab }* indicates that:

(a) there is such an amount of evidence in favour of *{ mūs'tahab }* that causes the belief in *{ mūs'tahab }* or Bel (*{ mūs'tahab }*) = 0.18

(b) since the value of Pl(*{ mūs'tahab }*) = 1, therefore Bel(Not (*{ mūs'tahab }*)) = 1 – Pl(*{ mūs'tahab }*) = 0 which shows that there is no evidence against *{ mūs'tahab }*

(c) Pl(X) – Bel(X) = 1 – 0.18 = 0.82, showing 82% ignorance about *{ mūs'tahab }*

Similarly, the belief interval of *{makrooh }* indicates that:

10. Belief in Islamic Perspective

In section 7, there are different values of basic probability assignments from which one can determine different values of belief and plausibility. The values of belief and plausibility, concerning different focal elements in m_1, m_2, m_3, $m_1 \oplus m_2$, $m_2 \oplus m_3$ and $m_1 \oplus m_3$ are provided below:

$Bel_1(\{ mūs'tahab, mūbāh \}) = 0.2$
$Pl_1(\{ mūs'tahab, mūbāh \}) = 0.2+0.8 = 1$

$Bel_2(\{mūs'tahab, makrooh \}) = 0.9$
$Pl_2(\{mūs'tahab, makrooh \}) = 0.9 + 0.1 = 1$

$Bel_3(\{ makrooh \}) = 0.6$
$Pl_3(\{makrooh \}) = 0.6 + 0.4 = 1$

$Bel_1 \oplus Bel_2(\{ mūs'tahab \}) = 0.18$
$Pl_1 \oplus Pl_2(\{ mūs'tahab \}) = 0.18 + 0.02 + 0.72 + 0.08 = 1$

$Bel_1 \oplus Bel_2(\{ mūs'tahab, mūbāh \}) = 0.18 + 0.02 = 0.2$
$Pl_1 \oplus Pl_2(\{ mūs'tahab, mūbāh \}) = 0.18 + 0.02 + 0.72 + 0.08 = 1$

$Bel_1 \oplus Bel_2(\{mūs'tahab, makrooh \}) = 0.72 + 0.18 = 0.9$
$Pl_1 \oplus Pl_2(\{mūs'tahab, makrooh \}) = 0.18 + 0.02 + 0.72 + 0.08 = 1$

$Bel_2 \oplus Bel_3(\{ makrooh \}) = 0.6$
$Pl_2 \oplus Pl_3(\{ makrooh \}) = 0.6 + 0.36 + 0.04 = 1$

(4) If [Bel(X), Pl(X)] = [0.5,0.5], then 50% information concerning X and 50% against X is available, i.e.,
   (a) there is 50% evidence in favour of X and therefore Bel(X) = 0.5
   (b) since the value of Pl(X) = 0.5, therefore Bel(~X) = 1 – Pl(X) = 0.5 which shows that there is also an equal amount of evidence, i.e. 50% against X
   (c) Pl(X) – Bel(X) = 0.5 – 0.5 = 0, showing zero% ignorance about X

(5) If [Bel (X), Pl (X)] = [0.2,1], then there is some evidence in favour of the hypothesis X is available while no information is available against X, i.e.,
   (a) there is such an amount of evidence for X, that causes the belief in X or Bel(X) = 0.2
   (b) since the value of Pl(X) = 1, therefore Bel(~X) = 1 – 1 = 0 which shows that there is no evidence against X
   (c) Pl(X) – Bel(X) = 1 – 0.2 = 0.8, showing 80% ignorance about X

(6) If [Bel (X), Pl (X)] = [0.3,0.8], then we have some evidence in favour of X as well as some against X, i.e.,
   (a) there is such an amount of evidence for X, that causes the belief in X or Bel(X) = 0.3
   (b) since the value of Pl(X) = 0.8, therefore Bel(~X) = 1 – 0.8 = 0.2 which shows that there 20% evidence against X
   (c) Pl(X) – Bel(X) = 0.8 – 0.3 = 0.5, showing 50% ignorance about X

(1) If [Bel(X), Pl (X)] = [0,0], then no information concerning X is available while information concerning ~X is sufficient to lead the belief in ~X to 100%, i.e.,
   (a) there is no evidence for X and therefore Bel(X) = 0
   (b) since the value of Pl(X) = 0, therefore Bel(~X) = 1 – Pl(X) = 1 or 100% which shows that there is sufficient evidence against X
   (c) Pl(X) – Bel(X) = 0, showing zero % ignorance about X (or 100% awareness)

(2) If [Bel(X),Pl (X)] = [0,1], then no information concerning X or against X is available, i.e.,
   (a) there is no evidence for X and therefore Bel(X) = 0
   (b) since the value of Pl(X) = 1, therefore Bel(~X) = 1 – Pl(X) = 0 which shows that there is no evidence against X
   (c) Pl(X) – Bel(X) = 1 – 0 = 1, showing 100 % ignorance about X

(3) If [Bel(X), Pl(X)] = [1,1], then X has been completely confirmed, i.e.,
   (a) Bel(X) = 1 which indicates that there is sufficient evidence to lead our belief in X to 100%
   (b) since the value of Pl(X) = 1, therefore Bel(~X) = 1 – Pl(X) = 0 which shows that there is no evidence against X
   (c) Pl(X) – Bel(X) = 1 – 1 = 0, showing zero% ignorance about X

(4) $Pl(X) \geq Bel(X)$

The combination of two plausibility functions Pl_1 and Pl_2 i.e., $Pl_1 \oplus Pl_2$ is the function $Pl_1 \oplus Pl_2$: $2^{\Theta} \rightarrow [0,1]$ defined by

$$Pl_1 \oplus Pl_2(X) = \sum_{X \cap Y \neq \emptyset} m_1 \oplus m_2(Y)$$

The function value Pl(X) indicates the total confidence not assigned to ~X, so Pl(X) provides an upper bound to the 'real' confidence in X. For a given basic probability assignment m, the property

$Pl(X) = 1 - Bel(\sim X)$

for each $X \subseteq \Theta$, holds for the belief function Bel and the plausibility function Pl corresponding to m. The difference Pl(X) - Bel(X) indicates the confidence in the sets Y for which $X \subseteq Y$ and therefore expresses the ignorance about X.

Definition: Let Θ be a frame of discernment and let m be a basic probability assignment on Θ. Let Bel be the belief function corresponding to m, and let Pl be the plausibility function corresponding to m. For each $X \subseteq \Theta$, the closed interval [Bel(X), Pl(X)] is called the belief interval of X

9. Interpretation of Belief Interval

Belief interval can be interpreted in terms of belief in a hypothesis, belief in negation of the hypothesis, plausibility of the hypothesis and ignorance about the hypothesis.

Some of belief intervals with their interpretations are given below:

Let Θ be a frame of discernment, and let $X \subseteq \Theta$. Now,

(1) Bel (ϕ) = 0
(2) Bel (Θ) = 1
(3) $0 \leq$ Bel (X) + Bel (~X) ≤ 1, where X is a hypothesis and ~X is its negation.

The combination of two belief functions Bel_1 and Bel_2 i.e., $Bel_1 \oplus Bel_2$ is the function $Bel_1 \oplus Bel_2: 2^{\Theta} \rightarrow [0,1]$ defined by

$$Bel_1 \oplus Bel_2(X) = \sum_{Y \subseteq X} m_1 \oplus m_2(Y)$$

A belief function provides for each set X only a lower bound to the 'actual' belief in X. It is also possible that belief has been assigned to a set Y such that $X \subseteq Y$. Therefore, in addition to the belief function the Dempster-Shafer theory defines another function corresponding with a basic probability assignment.

Definition: Let Θ be a frame of discernment and let m be a basic probability assignment on Θ. Then the plausibility function or upper probability function corresponding to m is the function Pl: $2^{\Theta} \rightarrow [0,1]$ defined by

$$Pl(X) = \sum_{X \cap Y \neq \varnothing} m(Y)$$

for each $X \subseteq \Theta$.
Some properties of the plausibility function are:

(1) Pl (ϕ) = 0
(2) Pl (Θ) =1
(3) $1 \leq$ Pl (X) + Pl (~X) ≤ 2