

this model is given in Theorem 2.1 of the Appendix. The main point, however, is illustrated by Figure 2.

As noted above, the IAEA's single inspection would have one effectiveness level if used against state 1, and another, usually different, level against state 2. Effectiveness against state 1 is measured horizontally in Figure 2, and effectiveness against state 2 is measured vertically. Note that a maximum effectiveness level is shown on both dimensions. The potential of the inspection is thus described by a point representing these two effectiveness levels; this point must lie within the rectangle defined by the minimum and maximum levels in each dimension.

Figure 2 shows the threshold levels of effectiveness for deterring each of the two states for violating, on an individual basis. In other words, if the point describing the inspection lies to the right of the vertical line labelled "Threshold," then the IAEA can deter state 1 by committing to inspect it. This threshold is simply the maximum effectiveness level determined in Section 3.1. Likewise, the horizontal "Threshold" line in Figure 2 shows the minimum level of effectiveness necessary to deter state 2 by committing to inspect it. Thus, an inspection represented by a point in the upper right-hand quadrant could be used to deter either state.

Unfortunately, there is a catch. The IAEA can deter only one state in this way — by committing to use its one inspection on state 1, say, it is also committing to leave state 2 uninspected and free to violate without threat of detection. In other words, if the IAEA is obligated to identify inspectees in advance, it needs not one, but two sufficiently effective inspections to deter both states.

There may, however, be a way to deter both states using only one inspection. As shown in the Appendix, if the states' value ratios are high enough and the inspection is sufficiently effective against both states (condition (2.9)), then by adjusting the likelihoods of inspection appropriately (condition (2.10)), the IAEA can deter them both. The levels of inspection effectiveness necessary to achieve this joint deterrence are shown in the upper right-hand corner of Figure 2, above and to the right of the curved line.

It is important to note that the IAEA achieves this joint deterrence using only one inspection — but that inspection is sufficiently effective against either state. In summary, the phenomenon captured here is that states are deterred from violating not so much by inspection by the threat of detection that would result from inspection — when the latter threat can be made great enough for both states, then both are deterred.