

Reformulating Jan Tinbergen's Normative Vision on Welfare and Security

S. Mansoob Murshed*

International Institute of Social Studies (ISS), Erasmus University of Rotterdam (EUR)
Kortenaerkade 12
2518 AX, Den Haag
The Netherlands
&
Coventry University
Priory Street, Coventry CV1 5FB, UK
Murshed@iss.nl

Abstract: This paper builds on the legacy of Jan Tinbergen by extending his analysis on welfare and security into a game theoretic framework. I first incorporate welfare and security in terms of inter-state tensions into a single utility function. An uncertain world is characterised by states that are more peaceful, and others where nations are more hostile to one. Both conflictual and peaceful outcomes lie along a spectrum of hostility short of war. I then show that non-cooperative behaviour between nations is Pareto inferior to cooperative behaviour, because the latter is associated with more actions and efforts to promote peace. Cooperative behaviour is akin to Tinbergen's notion of world government. Non-cooperative behaviour by states also leads to moral hazard, and there can be free riding in joint peaceful behaviour by some nations. The model is extended to aggressive international behaviour mandated by populist plebiscites or election victories.

1 INTRODUCTION

2019 marked the fiftieth anniversary of the first Nobel Prize in Economics awarded to Jan Tinbergen.¹ Many aspects of Tinbergen's contribution to economics are well known, for example his pioneering work in econometrics, and macroeconomic modelling as well as the rule regarding the necessity of exact correspondence between targets and instruments in macroeconomic policy making. What is less well known are his views about development issues, for example the norm regarding the volume of development assistance flows from rich to poor nations at 0.7 % of each developed country's national income.² Even less well known are Tinbergen's analysis of war and peace, particularly his characterisation of the linkage, even the inseparability, between welfare and security, and his strong advocacy for world government as a means of resolving inter-state coordination failure.

The present paper attempts to pay homage to Tinbergen's work on the nature of inter-state conflict by incorporating the welfare and security framework into a theoretical model of strategic interaction between nation states. It must be emphasised that inter-state conflict

* I am indebted to Peter van Bergeijk for enlightening me on many aspects of Jan Tinbergen's work and thinking, especially in relation to war and peace.

¹ Also awarded jointly to the Norwegian economist Trygve Haavelmo.

² The target for official development assistance flows was originally in the 1960s formulated as 0.75% of gross national product. The Pearson Commission restated the goal as 0.7% of donor GNI to be reached no later than 1980.

nowadays rarely descends into outright ‘war’; even the militarised inter-state disputes of the present era, say between India and Pakistan, are exemplified by their low intensity if measured in terms of the military casualties.³ Instead, what needs to be understood and modelled, as is done in this paper, is *hostility* between nations, which can take the form of the departure from international organisations, boycotts, sanctions and the general diminution of cooperative behaviour, all short of what is normally understood as war. The paper begins by selectively reviewing what economists in the past thought about the nature of war and what would achieve peace. I then build a model in the Tinbergian spirit that allows us to focus on the simultaneous analysis of welfare and insecurity. Finally, the relevance of the Tinbergen’s analysis in our era of heightened insecurity is demonstrated. This insecurity is a by-product of extreme or hyper-globalization of our present era, resulting in the emergence of structural and enduring inequalities, including inequalities of opportunity, as well as the rise in populism and inter-state hostility short of outright war.

The rest of the paper is organised as follows: the next section outlines the evolution of endogenous notions of war within the domain of economics. A two country theoretical model, in the spirit of Tinbergen and Fischer’s (1987) outline of a social welfare or utility function, where welfare and security go hand in hand is then constructed in the context of peaceful and less peaceful states of inter-state interaction. These peaceful and less peaceful states of nature can be affected by actions and efforts by both countries engendering inter-dependence, and we demonstrate the Pareto superiority of cooperative behaviour, akin to Tinbergen’s (1990) advocacy of world government. Non-cooperative behaviour by states is also associated with moral hazard and there can be free riding in peaceful behaviour by some states. Before concluding, we extend the model to demonstrate moral hazard, where an imisserized median voter may be induced to vote for more aggressive behaviour by his government on the international stage.

2 ENDOGENOUS WAR

Mainstream neoclassical economics has traditionally regarded war to be mainly outside the realm of economic analysis, except with reference to the costs of war and its bounded rationality. We may even be tempted to conclude that neoclassical economics regards war as an exogenous phenomenon. In the normative sense the damage done by war on infrastructure, productive capacity, output along with other adverse phenomenon such as inflation has long been considered in economic analysis. As early as in Adam Smith’s *Wealth of the Nations* (1776|1966) the costs of maintaining an army is mentioned. The sovereign may have the duty to maintain the security of his subjects from violence and invasion, but it comes at a price, which contemporary economists have described as the military burden of providing security, also alluding to the military establishment’s insatiable appetite for additional resources; see, for example Smith (2009). On the flip side, political sociologists, such as Charles Tilly, have pointed out the role of war in state building, asserting that in the historical European context the need for ever more complex military establishments necessitated enhanced state capacity, including fiscal capacity, leading the state’s increased ability to provide a growing array of public goods, as well its role in economic management.

Mercantilist motives can, however, make war endogenous to the objective of accumulation at the expense of others. The acquisition of trade monopolies, and resources with which to

manufacture and trade can turn war into a tool to achieve these objectives; see Findlay and O'Rourke (2007) for a historical account of the relationship between trade and power in the last millennium. The theory of economic imperialism may be considered in this context (Hobson, 1902; Lenin, 1917). The competition for markets, resources and even the need to exploit foreign cheap labour for the purposes of manufacture could lead to war. Another source of endogenous war could emerge as a result of the Malthusian trap which can be traced back to the work of Malthus (1798|1965). War might act as a 'positive' check when population growth outstripped the available produce of agriculture, which Malthus felt to be subject to diminishing returns, due to the fixity of available land, even if occasional productivity improvements in agriculture were possible. This also meant that wars, such as the Thirty Years War in the seventeenth century, as well as epidemics such as the Black Death in fourteenth century Europe could at least temporarily raise the living standards of workers, as the population dramatically declined compared to fixed factor land, whose productivity was largely undiminished by war or pestilence; see, for example, Voightländer and Voth, (2013).

With respect to the opportunity costs of war, Haavelmo (1954) provides us with a general equilibrium framework in which the trade-off between production and appropriation is modelled. Mankind can earn a living through production, or alternatively engage in predation. But war has costs, including the military expenditure to acquire capable armed forces, as well as the damage done by war. Pigou (1921) provides us with a measure of the military burden or defence expenditure in the UK just before the First World War, which he reckoned to be about 4% of national income in the UK around 1913 (Pigou, 1921, chapter 2). He also deals with how a war economy functions in terms of the effect on consumption, investment, as well as aspects of war finance. Keynes (1920|2004) was deeply opposed to the punitive terms of the 'Carthaginian Peace' imposed on Germany at the Treaty of Versailles in 1919 because he felt that the hardships imposed on the German people and economy would prevent the economic recovery of Europe, make Central Europe ripe for revolution and political instability.

Classical economists were less concerned with war, as they felt that that trade stimulated peaceful relationships between nations and peoples, and the benefits of free trade would be lost when military conflicts broke out. For example, John Stuart Mill (1840| 1968) argued that intensified international economic relations would reduce the incentives for conflicts among nations. Richard Cobden (1835) considered commerce to be the panacea for inter-state rivalry. Also, in a celebrated work, at the time of its publication just before the Great War, Sir Norman Angell (1910) argued that war between nations was utterly futile; it would be so destructive that even the victor's war related losses would outweigh any gains. Pigou (1921, chapter 3), however, argued that the interests of the armaments industry, and the competing interests among great powers associated with imperialism exacerbated the risk of war. Schumpeter (1954) believed that the growth of advanced capitalism would render war between nations less likely.

The belief – shared by classical and neoclassical economists – that intensified economic ties could be the basis of peaceful relationships between countries at first sight makes economic analysis of co-operation and conflict unnecessary. It is almost as if economists should focus on ways to secure free trade and full employment. But the notion of security (armed peace) needs to be incorporated into welfare, along with efforts to strengthen the peace if needs be via economic means (economic integration); the liberal peace idea (Gleditsch, 2008). This should minimise the risk of war, but even in a state of peace hostility between nations may still persist. Also, the peace based upon mutual economic interdependence which is central to the liberal or capitalist peace is not something that always emerges endogenously, nor is it always self-

enforcing. International cooperation through commitment to common membership of international organisations, or even world government is needed to secure the ‘liberal’ peace. Indeed, around the time of the outbreak of the Second World War, Lionel Robbins (1939|1968) argued that war was a consequence of the absence of federation at certain levels, implying that national economic sovereignty needed to be curtailed to ensure greater international economic policy coordination.

3 A TINBERGIAN MODEL OF INTER-STATE CONFLICT

Most wars nowadays are internal wars, which are also described as intra-state or civil wars. Yet inter-state tensions, short of militarised conflict, still persist. Many cold war rivalries have re-emerged, examples include the Syrian civil war, the recent escalation of hostilities between the USA and Iran, as well as trade related hostility between the USA and China (see, van Bergeijk 2019). Tinbergen’s life, encompassing the bulk of the 20th century, was dominated by intense inter-state conflict: the two world wars and the cold war that followed, with its ever-present threat of planetary extinction. The wastefulness of wars and the preparation for wars, which in addition to collateral damage, created immense human suffering was something Tinbergen was acutely aware of. The moral underpinnings of his economic analysis were modestly but oft-stated in his quest for an ‘optimum social order’.⁴ This involved not just the maximisation of utilitarian welfare⁵, but also the elimination of poverty, the attenuation of inequality and the *feeling* of security; see Tinbergen and Fischer (1987) as an example. Above all, Tinbergen clearly states that ‘welfare’ and security are inseparable. Incidentally, the welfare function in chapter 2 of Tinbergen and Fischer (1987) has also utility declining in inequality, something that would not fit in easily with our contemporary world (and is a challenge to mainstream economics as well).

The hallmark of Tinbergen and Fischer’s (1987) theoretical contribution is that welfare cannot be reckoned just in terms of the traditional notion of consumption (of private and public goods), but also includes security. This analytical approach differs from the mainstream approach to the “war” sector that concentrated on the problem of how to produce an exogenously determined level of military security at minimal cost (Hitch and McKean 1960, p. 2). In the view of Tinbergen and Fischer military expenditure, particularly of the defensive variety, could be justified as it permits the existence of the other inputs into welfare. Moreover, aggregate welfare is greater in a state of peace, albeit an armed peace involving some military expenditure for self-defence, than in a more hostile environment where the risk of war is greater. Hence, uncertainty needs to be introduced into the calculus of warfare and welfare (see also van Bergeijk 1987).

The remainder of this section builds upon a model of two countries (a home country, H , and a foreign country, F) that are hostile to one another in two states, both falling short of outright armed conflict. One state of the world is more peaceful with greater aggregate income and the provision of security unrelated public goods (health, education and social protection) compared to the less peaceful or more hostile state⁶. Security expenditure is greater in the more hostile

⁴ As in Jean Bodin’s idea of a well ordered society.

⁵ The greatest good of the greatest number to quote Jeremy Bentham, which can be naïvely construed as the sum of individual utilities, without due regard for the rapidly diminishing marginal utility of extra income for the already very rich and super-rich!

⁶ See Addison, Le Billon and Murshed (2002) for a sketch of a similar model upon which the present model is based.

state. Both countries can affect the probability of the more peaceful state by an action that is unique to the country, but each country is impacted by the action of the other. Examples of these are a greater willingness to negotiate, accommodate and enter into agreements, state visits, but also negative interaction such as (economic) sanctions, recalling of ambassadors or ending the membership of regional integration initiatives (Brexit). Our model thus includes greater commerce and joint membership of international organisations, both pillars of the liberal peace between nations (Gleditsch, 2008), as well as threats to the liberal peace. In this manner, we model changes in international inter-dependence.

As indicated, there are two states of nature: one more peaceful (P) and the other associated with greater conflict or hostility (C).⁷ Their probabilities are defined as π and $1 - \pi$, respectively. An important feature of our model is that states of hostility, or peace, are *relative*. The probability of either state is affected by an action (a) by the home country and effort (e) by the foreign country. These are also the strategic variables employed by the two sides. We postulate that the (subjective) probability of the good (peaceful) state π changes with the input of action and effort by the two sides, but at diminishing rates. Actions and efforts influence the probability of peace, but they do entail costs for each country, and these are explicitly modelled via cost functions. The costs of actions to promote peace could, for example, take a variety of forms including monetary expenditures, diplomatic expenditures and other forms of goodwill expenditure (van Bergeijk and Moons 2018).

The risk-neutral expected aggregate utility or expected social welfare (U_H) of the home country (H) is given by

$$U_H = \pi(a, e)U_H^P(Y_H^P) + (1 - \pi)U_H^C(Y_H^C) - C(a(m, n)) \quad (1)$$

Where U_H^P and U_H^C denote utilities or pay-offs in peace and conflict respectively, weighted by the probabilities of the two states. C is the cost function of undertaking the action, a . Action, a , increases the probability of peace, π , however, undertaking it entails a cost, for example in terms of foregone revenue. Also, $\pi_a > 0$, but $\pi_{aa} < 0$. Both $C_a > 0$ and $C_{aa} > 0$. The cost functions will be impacted upon by domestic identity based politics, $C_{a1} < 0$, $C_{a2} > 0$. There are two messages one internationalist (m) which lowers the cost of behaviour in the aggregative sense for the state, and another (n) sending out a nationalistic message lowering the cost of peaceful behaviour in the aggregate social welfare function. Disposable income and public goods provision (such as health, education and social protection) is greater in the relative state of greater peace (Y_H^P) than in the more hostile state (Y_H^C), and there is less harmful military expenditure crowding out other public goods in the peaceful state. Normally, the individual rational economic man or *homo economicus* would have a strong preference for the peaceful state; a notable exception in real life would be the Brexit referendum which produced a majority to be poorer and less secure. Other examples could include the election of Donald Trump in the USA in 2016, and the recent election victories of the incumbent Indian Prime Minister, Narendra Modi. Also, it should be noted that Tinbergen and Fischer (1987, chapter 2) explicitly enter the probability of a more peaceful world conditional on the implementation of a variety of relevant arms control treaties at the time. Hence, even if the peaceful state generates more welfare, its probability is enhanced by the *choice* of costly peaceful actions, both at home and abroad.

⁷ Conflict does not mean war as traditionally understood, but hostile actions such as sending out the navy, imposing sanctions, withdrawing from treaties or just aggressively pursuing trade or territorial disputes.

Turning to the foreign country (F), we similarly have

$$U_F = \pi(a, e)U_F^P(Y_F^P) + (1 - \pi)(\cdot)U_F^C(Y_F^C) - E(e, m, n) \quad (2)$$

A similar set of arguments apply to the foreign country, E is the cost of effort, e , which increases the probability of peace, π . Also, $\pi_e > 0$, but $\pi_{ee} < 0$, $E_e > 0$, and $E_{ee} > 0$. Also, similar messaging impacts on the cost of peaceful behaviour with one message lowering costs of peaceful behaviour, and another increasing it, $E_{e1} < 0$, $E_{e2} > 0$.

In the non-cooperative or Cournot-Nash game played by the two sides both sides move simultaneously. The solution to the model involves backward induction assuming sub-game perfection. Each side, the two countries, in our model maximises its own utility function or welfare with respect to its own choice variable. For the home government it means maximising utility, Equation (1), with respect to a as shown by

$$\frac{\partial U_H}{\partial a} = \pi_a [U_H^P(\cdot) - U_H^C(\cdot)] - C_a = 0 \quad (3)$$

The foreign state maximises Equation (2) with respect to e

$$\frac{\partial U_F}{\partial e} = \pi_e [U_F^P(\cdot) - U_F^C(\cdot)] - E_e = 0 \quad (4)$$

Note that in Equations (3) and (4) each country will equate its marginal benefit from exercising their own strategic choice to the corresponding marginal cost.

WORLD GOVERNMENT

It is interesting to consider a counter-factual situation where both sides are compelled to cooperate by an outside power or agency. This is similar to Tinbergen's advocacy of world government; see Kol and Wolff (1993) and Tinbergen (1987). This will lead to the joint maximisation of welfare (W), by summing Equations (1) and (2) together. The single *global* welfare function is maximised with respect to a in

$$\frac{\partial W}{\partial a} = \pi_a [U_H^P(\cdot) + U_F^P(\cdot)] - \pi_a [U_H^C(\cdot) + U_F^C(\cdot)] - C_a = 0 \quad (5)$$

and with respect to e in

$$\frac{\partial W}{\partial e} = \pi_e [U_H^P(\cdot) + U_F^P(\cdot)] - \pi_e [U_H^C(\cdot) + U_F^C(\cdot)] - E_e = 0 \quad (6)$$

It is immediately apparent from comparing Equation (3) with Equation (5), and Equation (4) with Equation (6), that the levels of both a and e are greater when the two parties can be coaxed into cooperative action. Hence, cooperation is Pareto superior to non-cooperative Cournot Nash behaviour, as the global marginal benefit of both a and e is equated to marginal cost. Note, however, that even the cooperative outcome may not be completely free of strife. Despite that, our finding is in the spirit of world government, as advocated by Tinbergen (1987), because he

felt national governments were too myopic; in our case, as will be demonstrated below, they can inadvertently conspire to generate moral hazard. The equilibrium described by (5) and (6) is on the 'contract curve', unlike the non-cooperative solution denoted by (3) and (4).

Returning to the non-cooperative game, each side's strategic choices will depend on the first order conditions given in Equations (3) and (4), along with a fixed conjecture about the opposition's strategic choice. These lead to the (linear) reaction functions for both sides, obtained by totally differentiating Equations (3) and (4) with respect to a and e . For the home country this is indicated by

$$\frac{de}{da/R_H} = \frac{C_{aa} + \pi_{aa} [U_H^C(\cdot) - U_H^P(\cdot)]}{\pi_{ae} [U_H^P(\cdot) - U_H^C(\cdot)]} \begin{matrix} \geq \\ \leq \end{matrix} \dots 0 \dots \text{if} \dots \pi_{ae} \begin{matrix} \geq \\ \leq \end{matrix} 0 \quad (7)$$

and for the foreign nation by

$$\frac{de}{da/R_F} = \frac{\pi_{ae} [U_F^P(\cdot) - U_F^C(\cdot)]}{E_{ee} + \pi_{ee} [U_F^C(\cdot) - U_F^P(\cdot)]} \begin{matrix} \geq \\ \leq \end{matrix} \dots 0 \dots \text{if} \dots \pi_{ae} \begin{matrix} \geq \\ \leq \end{matrix} 0 \quad (8)$$

Since $\pi_{ae} = \pi_{ea}$ by symmetry, $U^P > U^C$.

The reaction functions are positively sloped if $\pi_{ae} > 0$, implying that the two strategies are complements (Figure 1). This is the standard assumption in the literature on conflict. In our model, however, we also allow for the possibility that $\pi_{ae} < 0$, the choice variables are strategic substitutes, and the reaction functions could therefore slope downwards (Figure 2). This occurs because the strategy space is defined in terms of peace. Thus if one side behaves more peacefully it increases the utility of both parties, and the other country may free ride on this action by not bringing about a corresponding increase in their action. It must also be remembered that action and effort are not without their costs. Also recall that we are concerned with relative states of hostility and peace, not armed conflict.

MORAL HAZARD

Furthermore, the non-cooperative solution to the model generates moral hazard. From the viewpoint of some of the domestic citizenry and the rest of the world, the actions and efforts by the two governments are not always observable or verifiable. Also, neither side has the incentive to engage in globally optimal levels of action or effort. Since the moral hazard is found in both parties, we have double moral hazard, as analysed in Murshed and Sen (1995). In both Figures 1 and 2, the non-cooperative solution associated with moral hazard is given by point N. The fully cooperative and Pareto optimal solution is illustrated at point C, but that requires international cooperation, policy coordination or even world government as advocated by Tinbergen and Fischer (1987) or Tinbergen (1990).

Also, in Figure 2, when the strategies are substitutes we have an additional 'equity' problem. In the non-cooperative equilibrium (point N) the home country has effectively passed on some of the burden of adjustment to the foreign nation. In fact the level of effort exercised by the foreign country is greater than in the cooperative solution. We could say that the home country is free riding on the other nation. The positions could equally be reversed, between home and foreign countries. The elimination of double moral hazard requires the design of a mechanism that induces cooperation and transparency.

EXTENSIONS

What if one side, say the government, acts as a Stackelberg leader? Analytically speaking, this means the leader takes the follower's reaction function into account while maximising its utility. Diagrammatically, the leader's utility function is made tangent to the follower's reaction function. A variety of multiple equilibria are possible under Stackelberg leader-follower situations. We depict some of the possibilities by the point S in Figures 1 and 2. These are associated with Pareto improvements on Cournot-Nash behaviour. But this is not necessarily always the case, as a variety of equilibria are possible.⁸

An increase in the cost of peaceful behaviour in one country (the foreign nation) is shown by θ in both Figures 1 and 2, which is a downward movement in the foreign reaction functions. In Figure 1 when the two activities are strategic complements there is a clear welfare loss. In Figure 2, however, the two strategies are substitutes. The decrease in effort by the foreign country is matched by an increase in home country action. This might mean an improvement from the non-cooperative situation N in figure 2, as the home country was free riding on the foreign nation at that point. Analytically it implies an increase in the cost of peaceful behaviour for the foreign country, from (2). Differentiating the arguments inside the cost function for peaceful behaviour, E , in (2) with respect to its arguments, and maximising with respect to e :

$$\pi_e [U_F^P(\cdot) - U_F^C(\cdot)] = E_{e_1} dm + E_{e_2} dn; E_{e_1} < 0, E_{e_2} > 0 \quad (9)$$

The first term on the right hand side of (9) lowers the cost of peaceful behaviour or international cooperation; the second term has the opposite effect. An increase in hostility implies that the latter dominates the former.

When is there a rise in belligerent behaviour on the part of certain nations? Examples would be the British Brexit referendum, the actions of President Trump of the USA vis-à-vis Iran, and the behaviour of the Modi government in India in respect of Kashmir, which heightens tensions with Pakistan. These developments have their genesis in democratic institutions, elections and referenda, even though neither Trump's behaviour or Brexit cannot be regarded as *liberal*.⁹ Again, economic explanations may be paramount. The genesis of current hostile tendencies (trade wars, Brexit) may lie in the rise of inter-personal and functional inequality, co-terminus with the viral contagion of fake news spread by electronic media. The result is populist tendencies focusing on primeval identity with little heed paid to economic self-interest which is meant to characterise *homo economicus*. Identity may trump (economic) interests; identity based behaviour may entail hostility to 'an other', a sentiment that populist demagogues play up in order to feather their own political and economic interests.; see also the analysis in Glaeser (2005).

It is now useful to move from the aggregate behaviour or the state's actions that we have described until now to the analysis of the individual. To analyse how hostility may be rising in our contemporary world consider the behaviour of an *individual* voter in the model sketched above. This individual (Y_i) could be the median voter, who in an electoral process may swing

⁸ Quite often a Stackelberg leader is worse off than the follower in relative terms, when compared to the Cournot-Nash outcome.

⁹ For example, Rodrik (2017) helps us to understand that societies characterised by regular free and fair elections can nevertheless behave in an illiberal demagogic fashion from time to time, as feared by classical liberals who wished to restrict the franchise.

the national policy outcome, or at least determine its direction. In a society that is unequal, the median individual has an income (or endowments) below the mean (Y_F) for that society, in that sense we may deem him to be poor. He is faced with two prospects to vote on, one which advances his own income relative to the mean but is less resonant with narrow (ethnic or national) identity, and another which disadvantages him as an individual but may raise national mean income, and above all is in line with what he regards as appropriate identity based behaviour. This, latter, policy vector, will enrich the elite in his group: because even if mean national income rises, median income falls because of the relentless pursuit of *laissez faire* with dwindling social protection.

$$U_i = \rho \left(\frac{m}{n} \right) (Y_i^P; G) + \tau(\cdot)(Y_i^C; I); \rho' > 0; \tau' < 0 \quad (10)$$

In Equation (10) individual subjective decision weights¹⁰ attached to what we described as relative peace (ρ) and hostility (τ) are determined by preferences that are influenced by domestic politics, populism and demagoguery. The idea of the decision weight emanates from the theorizing of the Kahneman and Tversky (1979) prospect theory which permits framing in the mind of the individual, who may attach a greater weight to a prospect or outcome in an uncertain world based on its *desirability*. The probability of his voting for a set of policies that promotes a more peaceful and integrated world depends positively on a message, m sent out by one group of liberal politicians, and negatively on a (populist) message, n , sent out by another set of populist interests.¹¹ These rival messages compete in the framing process of the individual's mind set. But his personal circumstances also play a part, and may lead to a preference for narrow identity based outcomes such as, I in (10).

A relatively deprived voter who is precariously employed with declining social protection may give greater credence to the latter 'meme' message.¹² In the state of relative peace his individual income relative to the mean rises (or is at least constant); he also obtains a vector of public goods, G . In the less peaceful state, his identity based set of outcomes is realised; he obtains I , but his individual income relative to the mean is positive, although national income for the foreign country relative to the home country may increase.¹³ In a sense the individual *knows* and votes for something which makes him proud to be English or American even when it is literally a Pyrrhic victory, as he makes the already rich in his own nation richer, as many voters who voted for Trump were only too painfully aware of. Following Rodrik (2017) we could argue that because the poor median voter was not compensated for his loss of individual income and employment insecurity due to greater globalisation in the past, he is less likely at present to put a greater weight on the peaceful outcome, as he now tends to mistrust the more liberal supra-national or internationalised outcome. His choice, however, makes the world less secure.

4 CONCLUSIONS

¹⁰ These are different from conventional probabilities.

¹¹ The success of the populist message may resonate more and circulate like a biological virus in our increasingly plutocratic world which is nevertheless characterised by universal access to the electronic media.

¹² In other words, $\tau' > \rho'$, the efficacy of the populist meme message is greater.

¹³ The voter believes this can be achieved by pursuing America first protectionist policies, and restricting immigration because of his cognitive dissonance or an ardent desire to engage in time travel back to an era where manufacturing jobs were plentiful, the standard of living was increasing, Great Britain and America were great and more powerful than now, and prospects for future generations appeared very bright. Ergo, sometime in the 1960s.

Jan Tinbergen was considerably interested in designing world peace, the counterpart of his notion of a socially optimal order. In the pursuit of that goal he advocated economic analysts to view war, or for that matter conflict more generally, as a phenomenon that was endogenous and not exogenous to the variables of interest to the economist. Secondly, welfare and security could not be separated in the sense that welfare was greater in a more secure or peaceful *global* setting when nations felt more secure vis-a-vis each other without excessive and wasteful offensive military expenditure. Tinbergen also believed in the superiority of governance at the global level, because nation states often behaved myopically. In fact, he advocated a revamped and more effective United Nations system. A more modest achievement would be international cooperation at a more regional level as with the European Union.

We have attempted to model some of these ideas. We first construct expected utility functions for two states weighted by the probabilities of peaceful and more conflictual states of nature. The peaceful state is more secure and gives greater welfare. Actions and efforts by both countries enhance the probability of peace and hence nations are inter-dependent as far as security is concerned. Non-cooperative behaviour is Pareto inferior to cooperative behaviour and also produces moral hazard and free riding. There can be an endogenous increase in hostility by nations driven by populist identity based politics which have their genesis in rising inequality, and the decline of median incomes and life prospects. Thus the politics of populism is endogenous to the disadvantaging recent evolution of capitalism and the shape that the greater globalization has taken in the past four decades.

At present, the rules of globalization and capitalism, described as hyper-globalization by Rodrik (2017) seem to mainly serve elites who are owners of internationally mobile skills and wealth. There is an alarming growth in inequality, worldwide, exemplified by the rising ratio of wealth or capital to national income; Piketty (2014). This rising inequality, and the despair it produces sows the seeds of populist politics, which takes the form of a seeming backlash to globalization, involving greater hostility in international relations, as well as to minorities in the domestic context. Rodrik (2017) has pointed out something which he describes as the globalization trilemma, whereby the simultaneous achievement of national sovereignty, democracy and hyper-globalization is impossible. In a hyper-globalized context, further economic integration in terms of adverse distributional consequences outweighs the gains in terms of enhanced income. Hyper-globalization also means that the earlier domestic social contract, along with an earlier post-war commitment to a welfare state may become untenable, in parallel with the growth of precarious employment.

Rodrik (2018) argues that earlier on, the advance of globalization was made relatively more acceptable in Europe compared to the United States, given the greater prevalence of social protection in the continent. Gradually, after 1980, and especially since the dawn of the new millennium more and more groups have been disadvantaged by globalization and labour saving technical progress, and the politics of austerity has diminished social protection, fraying pre-existing domestic social contracts, and social mobility has been greatly diminished. A retreat from hyper-globalization may be desirable, even a return to the halcyon days of the Bretton Woods era (1945 to 1973), but not through channels that diminish international cooperation and partnership, like Brexit and President Trump's protectionist sabre rattling, because they will serve to further immiserize the already disadvantaged. What is needed is internationally coordinated checks on hyper-globalization and agreements on certain wealth taxes on the richest individuals, as well as job destroying automation. These policies are needed to address the alarming rise in wealth inequality, given the fact that social protection alone can only have a palliative, but not curative, impact on these inequalities.

Rodrik's trilemma, however, is not merely the statement of an impossibility theorem, but a clarion call to complement economic integration with political integration. Indeed, the trilemma also has a solution: world government (van Bergeijk 2019, p. 70). While that may seem naïve to many mainstream economists, it would be exactly the kind of point that Tinbergen might have made. World government, international development and greater equality within and between countries are in the end necessary requirements for a world order that sustainably ensures welfare and security as Tinbergen would have envisioned.

Figure 1: Strategic Complements

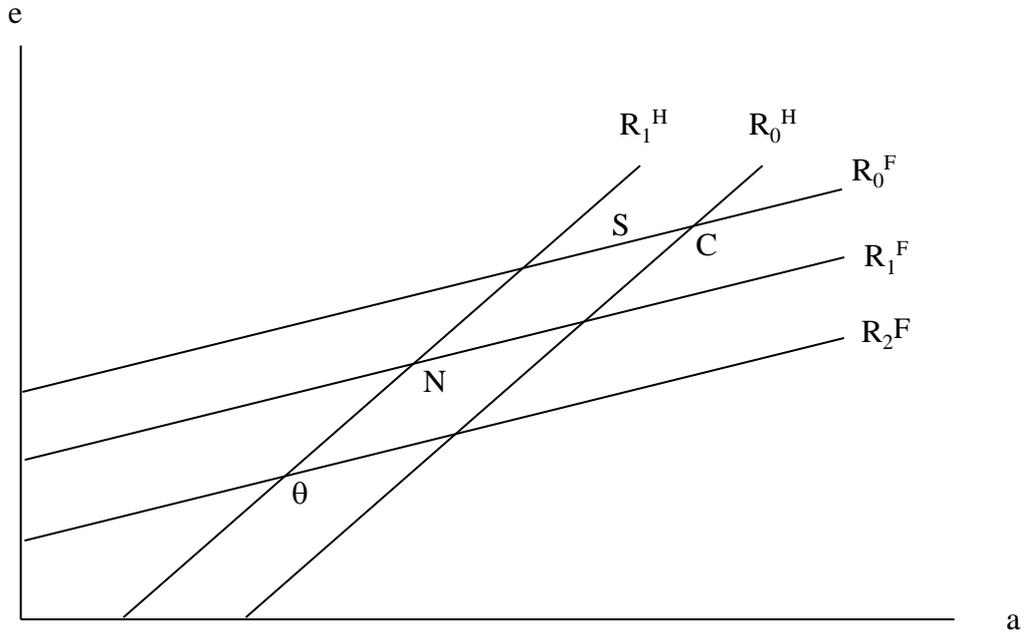
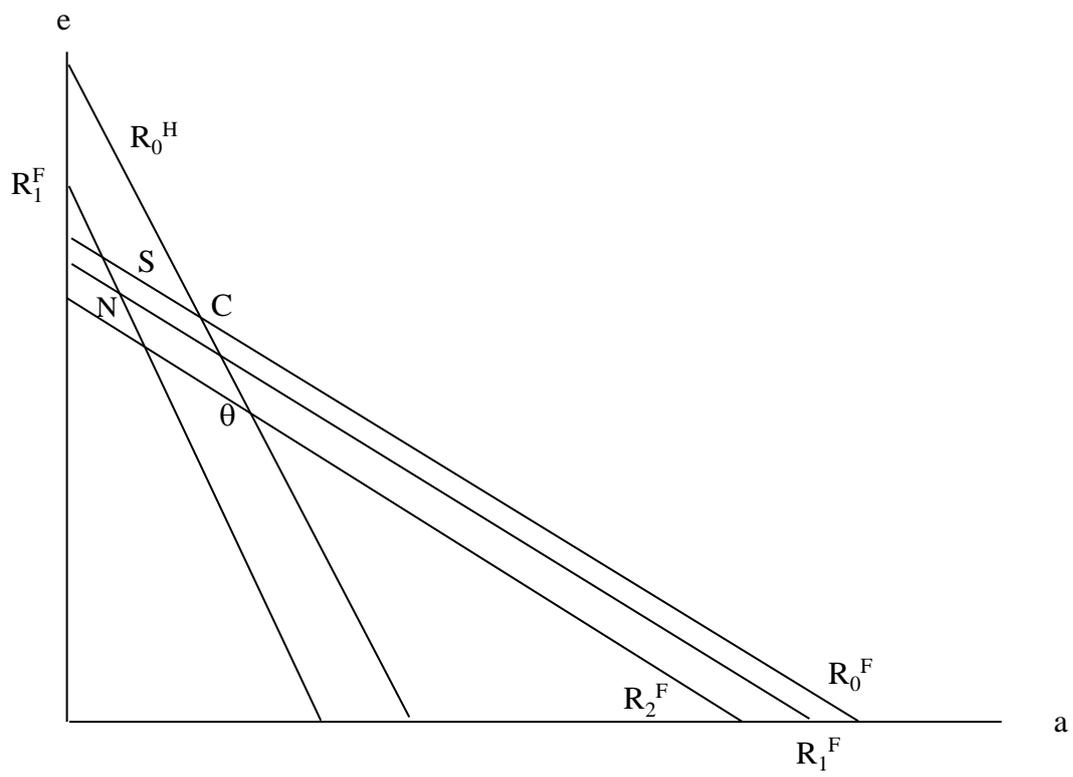


Figure 2: Strategic Substitutes



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