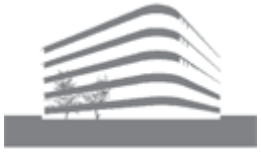

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THE WINNERS AND LOSERS OF WAR: STOCK MARKET EFFECTS OF ARMED CONFLICT, 1990-2000

Gerald Schneider and Vera E. Tröger

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Gerald Schneider is Professor of Political Science at the University of Konstanz. Vera E. Tröger is Research and Data Analyst at the Swiss Peace Foundation, Bern. This paper is based on a seminar entitled "War and the World Economy: The Impact of Political Conflict on Stock Markets" that Schneider presented at the Centro de Estudios Avanzados en Ciencias Sociales on 28 November 2003.

Abstract

War opponents frequently assert that the economic interests of the defence industry and other sectors drive the warring parties into the use of force. This paper evaluates this claim indirectly and identifies with a refined version of "commercial liberalism" the sectors that loose or gain during an intensification of the hostilities. Our time series analysis examines how the ups and downs in three conflicts (Iraq, Israel-Palestine, Ex-Yugoslavia) affected sub-indices of three major Western stock market indices (CAC, Dow Jones, FTSE) throughout the 1990s. GARCH (1, 1) models show in line with the distributional theory of war that the defence sector occasionally profits from an intensification of a conflict, while other sectors (aviation, hotels, leisure) lose under an escalation of the hostilities. Our model also accounts for the negative reactions of the "military-industrial complex" to cooperative events that the analysis uncovers for some conflicts.

Key words

Economy and war; Distributive effects of conflict; Commercial liberalism; War rally; Stock market; ARCH/GARCH Models, Event data

Introduction[1]

One of the longest-living claims in the international relations literature is the spoils of war-thesis. Popular expressions like "war-profiteer" illustrate the widespread belief that the greed of some actors is a key cause of armed conflict. One of the classical arguments along this line of reasoning is due to the Austro-German Marxist Rudolf Hilferding (1947[1910]:464, own translation). His early anti-globalisation study Das Finanzkapital [The Finance Capital] warned of the dangers of "limitless" profitseeking, paving the way to the theory of imperialism advocated by Rosa Luxemburg and Vladimir Ilyich Lenin: "Capital becomes the emperor of the world, and it conquers with every new country the new boundary that has to be transcended".

Although it has become rare to associate the origins of an armed conflict with the interests of a single class, moderate forms of the spoils of war-thesis still abound. In this article, we will examine the potential distributive effects that violent conflict has across different industries. The sectoral interpretation took its most prominent form during the second half of the 20th century in President Eisenhower´s warning against the improper influence peddling by the armaments industry: "In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist" (quoted in Kaufmann 1970:41). Shady business deals that accompany the "rebuilding" of Iraq have inspired similar criticisms: "War is a tragedy for some and a boon for others", wrote NYT commentator Bob Herbert (New York Times, April 10, 2003).

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[1] Paper prepared for presentation at the annual meeting of the International Studies Association, Montreal, Canada, March 17-20, 2004. Some preliminary results have been presented at the University of Siena, March 4, 2003, the Centre for the Study of Civil Conflict, Oslo, October 29, 2003, and the Instituto Juan March, Madrid, November 19, 2003. We would like to thank the Centre for Finance and Econometrics at the University of Konstanz for providing us with stock market data and to Malko Ebers, Gabriele Ruoff and Christina Zimmer for their able research assistance. A companion paper (Schneider and Tröger 2004) looks at the general welfare effects of war, while this paper focuses on redistribution across industries and firms.

In this article, we want to move beyond anecdotal evidence and to systematically evaluate the extent to which armed violence affects different sectors of the economy. To this end, we will examine how the daily stock market indices of different industries vary as a reaction to the ups and downs in three long-lasting conflicts: the confrontation between Iraq and the US-led alliance following the invasion in Kuwait, the conflict between Israel and the Palestinians, and the civil wars in Ex-Yugoslavia. Our explanation of the spoils of war-phenomenon builds on the Ricardo-Viner model. This analytical framework posits that sectoral rather than class conflicts shape the debate on foreign economic policy making. Distinguishing between potential "winners" and "losers" of war, we qualify commercial liberalism, an important strand in the liberal theory of international politics. Proponents of this view advance the double claim that economic interactions make war more unlikely and that war reduces economic activities (Barbieri 2002, Mansfield and Pollins 2003, Schneider, Barbieri and Gleditsch 2003 a, b). We contend against this expectation of a uniformly negative impact that certain sectors can profit from armed conflict directly or indirectly although the economy might generally suffer under an escalation of the hostilities. A sector like the defence industry or individual firms might directly profit from a war if the demand for its products increases as a direct consequence of war. Moreover, indirect war profiteering occurs if traders flee into more secure sectors with a steady demand that hardly risks to be affected by the hostilities. The stock market will, conversely, avoid industries which might seriously suffer under the war events.

We will test this modified version of commercial liberalism in a comparative analysis of the degree to which industrial sub-indices of three major stock market indices (CAC (Paris), Dow Jones (New York), FTSE (London)) react to international events during a period of ten years. We use a standard tool in financial econometrics, so-called GARCH (1, 1) models, to examine the degree to which the day-to-day trading in these stock markets reflects cooperative and conflictive events within the three conflicts. To make the conflicts comparable, we rely on the Goldstein (1992) scale to code the conflictive and cooperative events that King and Lowe (2003) collected for a ten-year period.

The statistical models support our expectation that the impact that an intensification of a conflict or a turn towards more cooperation have varies across sectors and firms. We are

particularly able to demonstrate that the British defence sector has profited from an intensification of the hostilities in the Gulf Region throughout the 1990s, but that other escalations occasionally have also affected the armaments sector negatively. Similar discrepancies can be observed for the reaction of the airline industry to an intensification of conflict and cooperation. We argue that the informative value of cooperation and conflict differs across conflicts and that we can thus account for such divergences theoretically.

This article is structured as follows: We first develop a version of commercial liberalism that accounts for the distributive effects of political events across different industries. Next, we present our research design and the statistical results. We conclude with a discussion of how war will affect industries in war-torn societies.

The Distributive Consequences of War

The aggregate economic consequences of war have preoccupied social scientists and economists since decades. One of the earliest statements is due to the controversial sociologist Werner Sombart (1913:11, own translation) who advocated the thesis of a double-sided effect of war on the economy: "War has not only destroyed the capitalist being, war has not only delayed the capitalist development: [war] has also encouraged this". A whole generation of economic historians has explored the explanation with which Sombart tried to make a counter-point to the well-known arguments of Weber and Marx on the origins of capitalism. Nef (1942:35) was one of the first to reject this thesis, arguing that "…peace contributed more than war to the progress of the large-scale capitalism which we associate with modern English and American civilization".[2]

Many historians have, as a direct or indirect offshoot of this debate, explored whether or not war profits at least certain parts of the economy. The evidence assembled so far is, however, not as conclusive that we can easily anticipate who will benefit and who will lose

[2] Winter (1975) offers a succinct summary of this debate.

during a war. To give some examples, Koistinen (1997:263) for instance notes that the profits of the U.S. Steel Corporation were six times higher in 1917 than the average in the period from 1912 to 1914.[3] Similarly, the income of British farmer rose during World War I (Dewey 1984), while the aggregate effect on the economy was negative (Greasley and Oxley 1996). Wilson (1978:149) reports, to move back in history two centuries, how the profits that English traders made in the first Dutch War affected foreign policy stance of their government: "There can be little doubt that the first Dutch War was accompanied by economic conditions of prosperity which many contemporaries linked causally with the war, and which encouraged the mercantile community to favour another Dutch War". Political economy explanations are also popular to explain the rise and fall of empires. Rejecting Marxist interpretations of Roman imperialism, Harris (1971:1382) for instance points out considerable economic interests associated with war: "If one survived, self-enrichment was almost automatic".

In political science by contrast, political economy analyses of the distributive effects of war are rare. Political scientists have started to look at the economic consequences of war in the 1970s when Organski and Kugler (1977) explored the Phenix factor. War cycles (e.g. Goldstein 1988, Pollins 1996) and role of war in the rise and decline of empires (e.g. Gilpin 1981, Rasler and Thompson 1994) are other topics that have received widespread scholarly attention. Studies on the war disruption hypothesis are the most recent addition to a literature that predominantly analyzes the aggregate rather than the disaggregated economic effects of war (Schneider and Schulze 2003). Barbieri and Levy (1999, 2001, 2003) maintain against the expectation of both realist and liberal authors that the impact of war on trade flows between warring parties is limited. Anderton and Carter (2001a, b, 2003), by contrast, demonstrate that this confirmation of the null hypothesis is largely due to the narrow sample of selected dyads. Looking at the impact of war on the stock market rather than trade, we were able to support the disruption thesis at least partly. However, financial markets can also experience a "war rally" if traders believe that hostile events signal the political resolve to end a confrontation quickly and to minimize the economic harm that the war will inevitably cause. The statistical analysis shows that the Dow Jones Index only experienced a war rally

[3] Brandes (1997) surveys the U.S. history on such terms.

for the Gulf conflict. Yet, in line with the original formulation of commercial liberalism, the French and British stock markets reacted adversely to severe conflictive events (Schneider and Tröger 2004).

Interestingly, the question of who wins and who looses under war events has hardly ever been examined systematically in the social sciences. A partial exception is the case study by Nincic (1980) who uses the cleavage between capital and labour to uncover the profiteers from U.S. military interventions. Referring to the support of A.F.L.-C.I.O. for the Vietnam war, he concludes that labour rather than capital derives gains from war: "…faced with eroding rates of profit, due in part to rising labor costs, and with actual or feared governmental regulation, business is not likely to support a lengthy war. Organized labor, on the other hand, tends to be a reliable backer of military intervention – presumably because of its effects on wages, employment, and the redistribution of national income from capital to labor" (Nincic 1980:114). Proponents of the diversionary theory of war have similarly tried, often with inconclusive results however, to detect the socio-economic conditions under which governments are more likely to use force against another state (e.g. Davies 2002). Yet, this popular approach leaves it largely open whether or not the interests of a specific sector or class motivate a government to seek a military adventure in adverse times (Schneider and Schulze 2003, 2004).[4]

A formally grounded, but disputed version of the spoils of war-thesis has shaped the debate on the causes of civil war for some time. In a series of papers and a concluding monograph, a World Bank research group headed by Paul Collier claims that "greed" rather than grievance is the root cause of armed violence in the developing world (Collier et al. 2003). These authors maintain that particularly the wish to exploit a natural resource increases the risk of civil war. The fear to lose income can be another impulse to resort to arms in weakly institutionalised states (Azam 2001). As some globalisation critics maintain,

[4] The crisis bargaining literature, arguably the most important theoretical and empirical innovation in the field, is no great help either in uncovering the winners and losers of war. This is largely a consequence of the recent orthodoxy to explain war as the consequence of a costly lottery (Fearon 1995). Some recent bargaining models of war move beyond the assumption that war will be inefficient in the end, but do not discuss the strategic profitability of war in a political economy fashion (e.g. Slantchev 2003)

the uniform application of the so-called Washington consensus through the International Monetary Fund has impoverished the poor in many developing countries (Stiglitz 2002). Recent quantitative studies show along this line of argumentation that the distributive effects of foreign economic liberalization render societies more unstable in the short term despite the positive impact that economic openness has in the long run (Bussmann and Schneider 2004, Bussmann, Scheuthle and Schneider 2003).

This study offers a somehow unique approach to the spoils of war-thesis insofar as it focuses on the distributive consequences at the level of the world economy rather than the economy of the embattled country. To assess the impact of war on the stock market, we rely on the Ricardo-Viner model of trade policy making as a starting point. This model assumes that factors are specific for an industry. They can consequently not move easily across industries in case of changing market conditions. The Ricardo-Viner model – also dubbed the sector specific model - typically implies that the division between industries shapes the cleavage over the orientation that the trade policy of a country should have.[5]

The sector specific approach suggests that the export and the importcompeting sector have different foreign economic policy preferences. As an extension of this analytical framework to three sectors shows, both of them suffer under an intensification of conflict (Schneider and Schultze 2003, 2004). This supports a major strand in the theory of war and peace, commercial liberalism. Proponents of this theory expect that war should disrupt economic activities (Polachek 1980). Because countries have to fear income losses as a

[5] This is in prominent opposition to the Heckscher-Ohlin model and its surrogate, the Stolper- Samuelson model, in which lobbies rally along a factor cleavage. The factor specific framework advocated by Heckscher and Ohlin assumes that the capital-to-labour ratio differs across countries. In capital rich countries, capital is in favour of free trade, while in capital–poor countries labour takes this position. Obviously, war hampers social classes unequally, and recent studies lend considerable empirical support to this analytical framework (e.g. O´Rourke 2003). Yet, it is the interests of capitalists that matter at the stock market so labour does not play a role in our analysis.

consequence of conflict, they will increasingly refrain from using armed force in times of growing trade ties.[6]

We can adapt this argument to build up hypotheses about the possible reactions of the stock market to war events. As any textbook on the theory of finance tells us, traders will perceive political events as exogenous developments that can become relevant for the financial markets (but they must not do so). We expect that the financial markets only react to political events that possibly have economic consequences or that they were unable to anticipate perfectly. Politics can affect, in other words, equity markets in two ways. First, it can increase or decrease the price of stocks. Second, political events alter the uncertainty of the traders about the future profitability of the equities and their risks, which translates into a higher or lower volatility of the stocks.

Exogenous developments change, to put it differently, the information level of the stock market. Traders who do not use relevant information will make losses. We can therefore expect that some political events alter the beliefs about the future development of a firm, a sector or all the stocks traded in an equity market. This reasoning is in line with the efficient market hypothesis put forward by Fama (1970, see also Fama and Miller 1972). He expects that markets use information efficiently and completely in their evaluation of markets, sectors, and individual firms. If a war event changes the prospect for a sector negatively, traders should sell stocks of the firms belonging to this sector.[7]

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[6] In a time of growing economic ties, the export sector will, however, profit from a war as long as the additional income due to the growth in openness outweighs the losses that a war brings about (Schneider and Schultze 2003, 2004).

[7] The criticism that was levelled against the efficiency hypothesis is not of major concern here. Advocates of the behavioural theory of finance point out that psychological factors and inefficient forms of learning should also be taken into consideration (e.g. Thaler 1993, Shleifer 2000). Obviously, grave events like the terrorist attacks of September 11, 2003, could lead to overreactions, a topic that has been systematically examined by Bondt and Thaler (1986) and others. Such behaviour would, however, support our basic hypothesis even more strongly that the ups and downs in a political conflict should find a systematic reflection in the ups and downs of the stock market.

Investors will generally perceive an intensification of the hostilities as a development that disrupts economic activities as long as a conflict is important enough for the stocks exchanged in a particular market.[8] The most severe conflictive events, at least in case that they were hard to anticipate, simultaneously increase the uncertainty over the possible development of a political crisis. This hypothesis is in line with one of the main conjectures that is attributed to commercial liberalism. This approach adopts a mercantilist perspective, implicitly assuming that governments act as "benevolent dictators" on behalf of their constituents and that their foreign economic policy only take aggregate welfare considerations into account (Schneider and Schulze 2003).

We argue against this liberal backdrop that the reactions of the market to war events not uniformly negative. Although economically important wars should lead to adverse reactions at the stock market, an escalation of the conflict may still lead to a "war rally". Observing an escalation, traders update their beliefs about different war scenarios. If they come at the average to the conclusion that the escalation is a sign of resolve to end a conflict quickly, they might reinvest money in the stock market. Decisive war events can thus reduce rather than enhance the uncertainty over the future development of a crisis. Simultaneously, traders might start again to move from less risky options into the equity market after a political event that will, in their view, end the escalation of the conflict. Hostilites can thus lead to a reduction of uncertainty and an upsurge of the stock market.

Traders behave similarly when they evaluate how political events affect an economic sector or a firm. While war might deflate the general economic expectations and thus also diminish the anticipated income of individual firms, it will also boost the income of some internationally competitive firms that can expect a growing number of orders as a consequence of the hostilities. By way of illustration, the defence sector experienced an increasing demand after the terrorist attacks of September 11, 2001 (Neue Zürcher Zeitung, February 10, 2003). This rally began to fade out in June 2002 when investors distinguished

[8] Gartzke, Li and Boehmer (2001) build up a signalling model to analyse how investors react to war events. We contend that this framework is not adequate because communication between stock markets is rather a case of costless signalling. The signalling model does, furthermore, not account for general and sectoral war rallies.

more clearly between different firms and how large the demand for their products would be in the future. This episode is an example of the direct effect that politics can have on equity markets.

Although industries are just an aggregate of firms, we will examine in this article whether the defence industry in general profits from an intensification of a conflict; we will supplement this analysis with an evaluation of how the stock market valued two large defence conglomerates and two other firms in the aftermath of political events. We have selected three violent conflicts in which changes from cooperative to conflictive periods and back could be observed for an entire decade and which involved the European Union or the United States as important third parties. Note that our inquiry does not aim to show how single events affect the stock market. We rather intend to examine whether the ups or downs in a specific conflict affect stocks in general. Our analysis distinguishes between cooperative and conflictive events. We thus examine whether the reactions to conflictive events are equivalent to the reactions to cooperative events.

Other "winners" of a war besides the defence sector are sectors which offer less risky alternatives during a period of political uncertainty. It is quite typical that traders move to sectors for which they assume a more or less regular demand even in times of combat. "For the first 10 days, the best-performing shares in the FTSE 100 were companies such as British American Tobacco, Cadbury, GlaxoSmithKline, gas pipelines group Lattice, Tesco and United Utilities", wrote the The Observer (October 21, 2001) in the aftermath of the attack on the World Trade Center. Uncertain traders will invest into options that they consider to be less risky and affected by increasing hostilities. Tourism and aviation should be among the sectors that will loose under a war, but profit from a turn towards more cooperation. Several studies have shown how war affects tourism in the Meditarenean (Fleischer and Buccola 2002) and world wide (Neumayer 2004). The "escape" into more secure options is an example of the indirect effect that the ups and downs in political conflict can have on stock markets.

Our hypotheses largely refer to sectors that should experience a direct impact of war on their valuation at the stock market. Differentiating between the impact of three types of

events, Table 1 summarizes our conjectures. We expect that both conflictive and cooperative events influence the development of the equities of a firm, sector or of the market in general. Severe conflictive events should, by contrast, affect the volatility of the stocks that are traded. Our analysis will differentiate between the impact of four sectors that should directly be affected by the war events. We expect the oil sector like the defence industry to be a potential winner; aviation, hotel or industries, conversely, belong to the losers of war. We expect the war profiteers to experience a rally after the intensification of conflict and the The defence and oil industry will experience "war".

Table 1. Expected impact of war on the stock market

	Stock market	*Defence*	*Aviation*	*Hotels*	*Leisure*	*Oil*
Escalation	-	+	-	-	-	+
De-escalation	+	-	+	+	+	-
Severe events	+	+	+	+	+	+

Note: + means a positive impact, - a negative one and 0 stands for the expectation of no effect. The impact of severe events refers to the volatility of the stock prices.

The hypotheses summarized in Table 1 only represent general expectations. It is perfectly possible that the escalation within a specific war leads to a war rally of the stock market and also some of the sectors that should react rather adversely to such a development. As indicated, such war rallies are more likely if a confrontational course of action reduces the uncertainty of the traders and renders the scenario more likely that the hostilities will end relatively soon. We expect such development especially for one of our three cases, the hostilities between the US-led alliance and Iraq. In the confrontation between Israel and the Palestinians, escalations are much less under the control of the Western powers so that an escalation should unambiguously harm the economy.

Research Design

We use a unifying GARCH (1, 1) model to calculate the impact of war and other international events or conflicts on stock markets. This statistical technique, in which the acronym stands for "generalized autoregressive conditional heteroskedasticity" and which is due to Bollerslev (1986), extend the ARCH framework of Engle (1982). Although ARCH models only found some applications in political science (e.g. Beck 1983), they are the workhorse model in financial econometrics.

ARCH/GARCH models distinguish themselves from other time series techniques as ARMA by not only assuming that present realisations depend on past information. The basic philosophy of the ARCH/GARCH approach is that the error variance should not be considered to be constant with respect to the exogenous variables, but to vary over time.[9] This assumption is based on the observation that time series volatility comes in clusters and that periods of high volatility are followed by periods of low volatility. This means in our context that important international events in period t increase the effect of other international events in periods t+1, t+2 and so on. We can represent the development of a stock market through the information Ft available at period t containing the process Xt and all past realizations in Xt. The most important assumption is that the stochastic error term at is not considered to be independent, but only to be centred and uncorrelated.

The standard ARCH model also assumes that the conditional variance of at is a linear function of lagged quadratic errors. In an explanatory setting, we can thus explain the variance through past errors and a set of exogenous factors. GARCH models additionally assume a symmetric effect of positive and negative errors on the volatility of the series. This means that we include the lagged error term and the lagged forecast variance in the variance equation.

All exogenous and endogenous stock market variables are differenced for two reasons. First, high-frequency financial data, such as daily equity market indices, exchange or interest

[9] Engle (2001) offers a straightforward introduction to these modelling techniques, the articles Franses and McAleer (2002) survey recent technical developments.

rates, are almost always driven by stochastic processes. As unit root-tests show, the stock-market time series have all a single unit root, hence they are non-stationary. Unit roots render OLS-regression results spurious, that is the estimates become inefficient and inconsistent. Time series econometricians often opt in such a case for co-integration, if possible or for first-differencing the time series to render them stationary. Johansen co-integration tests have shown that none of the three stock markets series are co-integrated, thus co-integration is not an adequate solution. The same holds true for the sectoral indices.

Second, since we are only interested in the short term effect of cooperative or conflictive events on the daily stock price first differencing is especially warranted. Because first differencing eliminates level effects, another approach would have been necessary for the attempt to predict level changes. However, in first difference regressions the question of the appropriate lag length is crucial (Plümper, Troeger, Manow, 2004). Accordingly, we tested in accordance with two criteria - BIC (Bayesian Information Criterion) and AIC (Akaike Information Criterion) - how many lags of the exogenous variables are optimally included in the model.

First differencing renders the stock market time series mean-stationary. Yet, when we look at the variance of the differenced data we realize that it is quite volatile over time. That is the variance is not constant but time dependent. Unstable variance violates one of the Gauss-Markov assumptions of OLS-regressions and consequently has to be accounted for.

We apply GARCH models to account for the time-dependent variance of our endogenous variables. ARCH LM tests showed that time dependency of the error term affects all our estimations. To account for this kind of heteroskedasticity, we modelled the ARCH process directly within the error term. We do not only apply basic ARCH- and GARCH-models where the variance is a-theoretically modelled by the lagged forecasting variance (GARCH-term) and the lagged squared residuals (ARCHterm). We have good reason to belief that the variance is also determined by the development of different international crises, especially by particularly serious conflictive events or a turn towards more cooperation. Therefore we do not only model the mean of the stock markets by theoretically interesting variables, as simple OLS-models do. We rather include as well meaningful

exogenous variables into the variance-equation. As outlined in the theoretical part, we include for each conflict a dummy variable that amounts to 1 if an especially severe conflictive event occurred on this day.

Our main explanatory variable is the impact that contemporary events have on the aggregate value of the three stock markets. We conjecture that international markets evaluate events within an international conflict according to their importance and that both conflictive and cooperative developments have economic repercussions. To estimate the impact of international events on stock markets, we have selected three militarised conflicts in the period from 1990 to 2000 that continued throughout the whole period and actively involved the United States, the European Union or one of its leading member states as an international actor. As noted before, the involvement of the actors differs considerably, making it likely that there will be differences in the impact that political events incur on equity markets.

We used the Goldstein (1992) transformation of the WEIS coding scheme to code the events and to obtain political time series. The machine-coded event data collection of King/Lowe (2003) was our empirical source. We have calculated the sum of cooperation and conflict per day for each conflict. Note that the sums of cooperative and conflictive events within a particular conflict correlate negatively with each other. The Pearson correlation coefficients do, however, not exceed –0.5.

We have chosen one U.S (Dow Jones Industrial Average, New York) and two European indices of equity prices (Cotation Assistée en Continu 40 (CAC), Paris, and Financial Times Stock Exchange (FTSETM 100), London). The Dow Jones is besides the NASDAQ the best known index on the New York Stock Exchange whose market capitalisation amounted to $16´300 billion in 2000. In September 2000, the market capitalisation of the London stock exchange amounted to around 9´000 billion €, while the Euronext stock exchange, which includes the Paris bourse, was valued 2´700 billion € (Howells and Bain 2002:129).[10] Although all three stock markets have a global reach, the

[10] "Euronext" is a merges of the Brussels, Amerdam and Paris bourses. The stock exchange at Paris accounted for 1´700 billion € and thus around two thirds of the Euronext market capitalization. The stock exchange at Frenfurt had a total value of € 2´000 bn in

firms listed on them are still largely of national origin. Around two thirds of the NYSE market capitalization came from U.S. firms in 2000.

Because international politics does not know weekends and holidays, we extrapolated the financial series to obtain values for the non-trading days in the three financial markets. The FTSE and the CAC indices are weighted to reflect the differing capitalization of the shares traded. This is in contrast to the Dow Jones index which just stands, as its name suggests, for an average.

The Impact of Three Conflicts on three Stock Markets

In this section, we analyze the double claim that the ups and downs in some lastlasting violent conflicts have different economic repercussions across sectors and that some industries profit from an intensification of the hostilities. Before we move to a test of our hypotheses we first offer some descriptive evidence on the sectors and conflicts that we are examining. The three stock markets under investigation all belong to the top markets in the world. Differentiating between the three markets, Figure 1 shows how the general index and the sub-indices evolved over time.

Although the sectors have followed the general trend of the 1990s in a similar fashion, there are some remarkable differences. The stock market history of the 1990s has often been compared to the one of the 1920. Indeed, the markets have grown considerably during this time. In July 1990 and thus just one month before the invasion in Kuwait, the Dow Jones hit for the first time the mark of 3000 points. Nine years later, in March 1999, it scored for the first time more than 10´000 points, and it even exceed 11´000 points in early May 1999.

September 2000 (Howells and Bain 2002:129).

Although the boom lasted only some months more, the growth of the “technology bubble” has been far from linear. The Asian crisis (October 1997) and the crashes of August 1998 dampened the euphoria, however, only for a short period of time before the market rebounded again.

The U.S. hotel sector reacted strongly to the Asian crisis, while the defence sector plunged in August 1998. The stock market development of Raytheon, one of the biggest arms manufacturers, followed the trend of its sector, whereas the stocks of Boeing and Lockheed Martin (not shown in Figure 1-B) exhibit more unique patterns. On the French stock market, the defence sector had much higher volatility than both the CAC 40 and the other subindices, whereas the volatility of the FTSE 100 was more pronounced than the one of its sub-indicies.

As Figure 2 shows, the three conflicts exhibit different patterns than the stock market data. To differentiate between the two event data series per conflict, the sum of conflictive events per day carries a negative sign, while the sum of cooperative events is positive. In the

statistical analysis, both series are positive. We have conducted co-integration tests to see whether the series share a common trend but are not linked to each other causally. These tests confirmed the intuition nurtured by the visual inspection of the series that no common trend exists.

Figure 2 demonstrates that the escalation in the confrontation of the Security Council and Iraq was not strongest during the first war of the US-led alliance against Saddam Hussein. This might be due to the fact that event reporting during wars is much less detailed than during a relatively short confrontation like the one that took place in December 1998. The development of the civil wars in Ex-Yugoslavia shows that the interactions on the Balkans became more peaceful after the conclusion of the Dayton agreement. The conflict between the Palestinians and Israel became more permanently conflictive towards the end of the period under examination when the second Intifada started. Sparks of intensive confrontation and, more seldomly, increased cooperation characterize the series throughout the 1990s.

We will explain the ups and downs of the markets and their volatility in the following with the help of multivariate GARCH (1, 1) models. All regressions include the development of other relevant markets as regressors. The explanation of the Dow Jones indices includes more predictors because of the time difference since the U.S. market can reflect European development while the London equity market is able to include information from Paris. Table 2 reports the results for the CAC and its subindices, Table 3 does the same for the Dow Jones and Table 4 lists the findings for the FTSE. The GARCH (1,1) models that we estimated do not suffer from autocorrelation, as the Durbin Watson statistics show. One indication of the stability of the models is also that the sum of the ARCH and GARCH terms does not exceed 1. Because the error terms are spherical and normally distributed, heteroscedasticity is no longer a problem.

Table 2 offers the first clear indication that the reactions of the equity markets to political developments can vary greatly across sectors and militarized conflicts. The defence stocks traded at the Paris stock exchange did not experience a war rally. This is in contrast to the oil sector which responded positively to an intensification of the hostilities in the Gulf. Interestingly, the defence sector reacted negatively to increased cooperation in the conflict between Israel and the Palestinians whereas cooperative turns in Ex-Yugoslavia led to positive reaction from the leisure industry and the defence sector. The volatility of the stock markets decreased rather than increased after severe conflictive events. As can be seen in Table 3, this is in considerable contrast to the New York Stock Exchange.

Table 2

The analysis presented in Table 3 exhibits that the general Dow Jones index reacted positively to an intensification of the hostilities in the Gulf. There is, however, some support for the "war rally" hypothesis for the reactions of the oil sector to the civil wars in Ex-Yugoslavia for which we can also see a negative effect onto aviation. The NYSE also shows that we can occasionally observe "peace rallies". Aviation, hotels and leisure reacted positively to cooperative moves in the conflict between Israel and the Palestinians. Severe conflictive events in this conflict have increased the volatility of the equities in three subindicies. The only exception to this trend is the negative reaction of the hotel business to strongly conflictive events in Ex-Yugoslavia.

The results reported for the NYSE support, by and large, our hypotheses. We should note, however, that a direct impact of political events on financial markets is in general the exception rather than the rule. One reason for the frequent confirmation of the null hypothesis is that we use days as units of temporal aggregation. This corresponds to the market efficiency hypothesis according to which traders will quickly integrate new information. Some events will thus lead to a reaction that is immediately strong but to which the market will adapt within hours or minutes. If we were moving towards minutes as units of temporal aggregation, we could probably see much stronger evidence for the interaction between politics and markets. Yet, such a research design would come at a considerable price because it would be difficult to generalize our findings for a large class of political events. Another reason for the frequent confirmation of the null hypothesis trivially is that many political events do not matter much for world markets.

The London Stock Exchange is the one in which we find the weakest link between the ups and downs in the three conflicts and the equity market. The defence sector reacted nevertheless very strongly and in line with our hypotheses to the conflict between Iraq and the U.S.-led alliance. The negative reaction of the aviation stocks to cooperative events could, on the other hand, be a consequence of mistrust. If traders and investors did not believe that the reconciliatory moves in this conflict lead to a real settlement, we should expect negative sign in the mean and the variance equation because severe conflictive events would then diminish rather than increase the uncertainty.

Table 3

Table 4

The findings for the British defence sector are mirrored in the equivalent results for the stock market development of British Aerospace, which we report in Table 5. The manufacturer of arms and products for civilian use reacted positively to conflictive events in the Gulf, but negatively to an escalation in Ex-Yugoslavia. An escalation in this conflict meant, however, also that NATO forces intervened in the Bosnian and Kosovo wars. Such interventions are certainly conflictive, but can bode unfavourably for arms manufacturers because the demand for their product will decrease rather than increase once the war ends. Raytheon, a U.S. defence firm, reacted negatively to cooperation in the Gulf war, but positively to the equivalent events in Ex-Yugoslavia.

Table 6 summarises our findings. As we can see, the empirical analysis of the interrelationship between violent conflicts and equity markets lends only partial support to the spoils of war-thesis and its complement, the "peace rally" hypotheses. We found six times evidence for the war rally conjecture and thus the expectation that the equity market in general or an industrial sector (oil, defence) experience an increase following growing tensions in a major armed conflict. In one case, the evidence contradicts the hypothesis that some wars create "winners" at the stock market. The defence sector also reacted once negatively to a turn towards more cooperation; on two occasions, however, we find evidence that is in opposition to this conjecture.

If we simply count the number of confirmations, we have to reject the hypothesis that some industrial sectors experience a "peace rally" when warring parties exchange reconciliatory gestures. Yet, all the confirmations of the thesis come from the conflict between Israel and the Palestinians, while the contradictions stem from the Gulf War. We believe that traders did not trust the cooperation in the interaction between Iraq and the U.S. led alliance. Finally, the evidence in favour of the volatiliy thesis is rather mixed because stock prices became both more and less volatile.

Table 5

Conclusion

This article has shown in an analysis of the popular spoils of war-thesis that the ups and downs in three violent conflicts had direct distributive effects on three equity markets throughout the 1990s. As our econometric tests have demonstrated, the defence and the oil sector have experienced a war rally at the stock market following increasing hostilities in the Gulf War. This is in line with the positive development that the general indices – CAC 10, Dow Jones, FTSE 100 – exhibited as a reaction to conflictive events in this region. Similarly, an improvement in the relationship between Israel and the Palestinians led to a "peace rally" for some aviation, hotels and leisure indices, while it lowered the valuation of one defence sector index. We have only found mixed support for our conjecture that an intensification of a conflict through particularly severe events increases the uncertainty of the actors and hence the volatility of the stocks.

The results reported and discussed in this article are, however, often ambiguous. This indicates that markets distinguish clearly between conflicts. Increased cooperation in the confrontation between Iraq and the U.S.-led alliance decreased rather than increased the stock prices of the aviation, hotel and leisure sectors. This contradiction to our hypothesis can be explained through the distrust of the markets towards a rapprochement between the Iraqi regime under Saddam Hussein and the West.

The results lend some support to our attempt to recast commercial liberalism through the help of distributional considerations. The analysis particularly shows that we need to differentiate much more clearly between the wars in which the display of military might is greeted by the market and those violent conflicts in which the use of force has negative reactions. The results suggest that interventions by the United States in a military conflict will most often lead to positive reactions from the market, whereas civil wars in a geopolitically important region are associated with the opposite reaction.

Our results refer to the reactions towards the ups and downs of militarized conflict in three globalised equity markets. War rallies will be much rarer to observe in stock markets of a country or region that is a direct victim of a military confrontation. Future studies will in accordance with the present analysis point out exceptions to the universalist claims that the advocates of commercial liberalism frequently make. These examinations will, however, not lead to a complete rejection of this research programme, but rather to attempts to delineate much more clearly the conditions under which economic integration deters violent actions. This study is a step in this direction.

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