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Four Ways We Know the Democratic Peace Correlation Does Not Exist in the State of Knowledge

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Abstract:

Multiple studies have shown that when advanced-market “contract-intensive” economy is considered in a regression of fatal militarized interstate disputes, crises, or wars, the democratic peace correlation, the observed dearth of militarized conflict between democratic nations, becomes near zero and insignificant. Defenders of the existence of a correlation of democracy with peace claim these studies contain multiple errors. This article examines the state of evidence behind all claims in this debate. Four crucial facts are identified: (1) There is no report in print that shows democracy significant in a regression of fatal disputes controlling for contractualist economy that is unencumbered with controversial practices; (2) Every empirical defense of democracy has been rebutted, and the rebuttals remain uncontested; (3) There is no democratic peace in the nineteenth century, when there were no contractualist dyads but were democratic dyads; and (4) New analyses with revised direct data on contractualist economy covering 94% of observations over the largest-observed 1920–2010 period show that democracy without contractualist economy has a near-zero correlation with peace. Together, these facts inform us that there are no scientific grounds for deeming the democratic peace correlation as existing in the state of knowledge.

Keywords: capitalist peace, conflict, democratic peace, security

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1 The Controversy

The democratic peace correlation, the observed dearth of militarized conflict between democratic nations, is widely considered a law of international politics. The existence of this law matters, for it has caused the United States to adopt the national security strategy of promoting democracy in other nations (Clinton, 1994; Russett, 2005). However, causation cannot be seen, it can only be theorized, and no theory explaining how the law of democratic peace works has accrued enough evidence to render it widely convincing. If democracy does not cause peace, the greatest power on earth has crafted its grand strategy, at least in part, on a fatally flawed assumption.

The dearth of a convincing theory for the law of democratic peace means that the correlation itself is the principal evidence for causation from democracy to peace. What happens if this correlation does not exist? In standard statistical analyses, if the introduction of variable Z causes the impact of X on Y to become insignificant, and we have theory for how Z can cause both X and Y, we have evidence that an observed relationship is spurious (Blalock, 1979: 474). Multiple studies have shown that when countries’ economic type is considered in a regression of fatal militarized interstate disputes, crises, or wars, the democratic peace correlation becomes near-zero and insignificant (Mousseau 2009; 2013; Mousseau, Orsun, Ungerer, & Mousseau, 2013a; Mousseau, Orsun, & Ungerer, 2013b; Mousseau, 2018). This outcome was predicted by theory that identifies how economic type can explain both democracy and peace, and which has been corroborated by compound scholars in multiple domains, including the areas of international terrorism (Boehmer & Daube, 2013; Krieger & Meierrieks, 2015; Meierrieks, 2012), military coups (Powell & Chacha, 2016), state capacity (Enia, 2017), and human rights (Wright & Moorthy, 2018).

“Defenders” of democracy as a cause of peace have not sought to make their case with evidence for any theory for how democracy could cause peace. Instead, Defenders mainly assert that a correlation of democracy with peace exists controlling for contractualist economy, treating this claimed correlation as causal (Dafoe & Russett, 2013; Dafoe, Oneal, & Russett, 2013; Ray, 2013; Ray & Dafoe, 2018).

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This article is intended to help the field make sense of this controversy. Economic norms theory distinguishes two primary kinds of economies history: traditional “status” economy – where people are dependent on groups and their leaders – and “contractualist” economy – where people are dependent on the impersonal marketplace. The former encompasses most of human history, and causes loyalty to groups and group leaders; the latter exists today in what are often called the “market democracies,” and causes loyalty to impartial rule-of-law states. Contractualist economy also causes democracy, as the best means to keep the state impartial in its stewardship of the economy, and foreign policy interests in the global market-oriented order. In this way, contractualist economy is suggested to cause both democracy and, among the marketplace democracies, peace, as a result of common interests, yielding the prediction that the democratic peace is limited to those democracies that have contract intensive economies. It was only after this prediction was made (Mousseau, 2000) that direct data on contractualist economy became available (Beck & Webb, 2003), and the prediction corroborated: About one-half of all democracies lack contractualist economy, and these democracies are not in peace (Mousseau, 2009).

Space does not permit further discussion of economic norms theory or its application to the democratic peace, which can be reviewed elsewhere (Mousseau, 2019). Nor does space allow discussion of other challenges to the democratic peace correlation.¹ Instead, this article seeks to distinguish the extraneous from the essential in the empirical controversy of whether a correlation of democracy with peace exists, controlling for contractualist economy. I show that in the present state of knowledge, such a correlation does not exist, in four unambiguous ways.

2 There is no clear-cut regression showing democracy significant

Twenty-eight regressions in print have reported no meaningful correlation of democracy with peace in analyses of fatal militarized interstate disputes (MIDs), crises, and wars, controlling for contractualist economy. In no case have Defenders shown democracy significant in corresponding analyses unencumbered by controversial practices (Mousseau, 2018).

There are two points to address regarding this compelling fact. First, both sides in this debate agree that a correlation of democracy with peace is significant at the lowest level ($p < 0.10$) in analyses of all MIDs, meaning analyses of those with and without fatalities (Dafoe et al., 2013: 208; Mousseau, 2018: 186). This statistic is not consequential, however, because both sides also agree that analyses of all MIDs are less reliable than analyses of fatal-only MIDs (Mousseau, 2018: 186–87; Oneal & Russett, 2005: 299–300).

Second, Defenders have reported democracy significant in some portion of 144 regressions of MIDs using various specifications (Dafoe et al., 2013). However, Dafoe and colleagues (ibid.) provide no criteria for their 144 specifications (why not 500 specifications?); some did not even control for contractualist economy. Examining their data, I chronicled that every one of their regressions of fatal MIDs contains some controversial specification practice that is contrary to scholarly community standards (2018: 183–86). In their rejoinder, Ray and Dafoe (2018) did not defend a single practice; nor did they report any new regression showing democracy significant.

3 Every empirical defense of democracy has been shown to be unsupported

Defenders of democracy have offered a total of five empirical claims in defense of democracy. As can be seen in Table 1, all five have been rebutted. In all five cases Defenders have had ample opportunity to explain why the refutations of their claims may be in error, in three cases explicitly in rejoinders (#s 3, 4, and 5), and in all five cases they chose not to do so. Instead, Ray and Dafoe (2018) used their rejoinder to merely repeat two of the prior claims (#s 3 and 4), without recognition of the fact that these empirical claims, and in fact all five of them, were now contested with new evidence. Science is cumulative, so refuted claims cannot be treated as standing simply because they are repeated and their refutations ignored.²

Table 1: Empirical claims made in defense of democracy, and their present standing.

Defensive claims	Present standing
1 If democracy is defined in a binary way at the highest category of the 21-point Polity IV measure of democracy (+10), democracy would likely be significant controlling for contractualist economy (Dafoe, 2011: 3). No evidence provided	Subsequent tests show that democracy defined in a binary way at the highest category of the 21-point Polity IV measure of democracy (+10) is not significantly correlated with peace (Mousseau, 2013: 192). Defenders did not raise this issue again in multiple later articles

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| <p>2 The difference in the coefficients for democracy with and without control for contractualist economy is not significant (Dafoe & Russett, 2013: 113). No evidence provided</p> <p>3 Multiple imputation of missing values for contractualist economy “produce significant coefficients” for democratic peace (Ray and Dafoe [2018: 198] describing findings in Dafoe et al., 2013)</p> <p>4 The dropping of on-going years of militarized conflict “restores the evidence for the democratic peace” (Dafoe et al., 2013: 204)</p> <p>5 Significant interaction term of democracy with contractualist economy is evidence that democracy has a conditional causal impact on peace, and thus the democratic peace is not spurious (Dafoe and Russett 2013: 116–118; Dafoe et al., 2013: 205–206)</p> | <p>Subsequent tests confirm that the difference in the coefficients for democracy with and without control for contractualist economy is highly significant (Mousseau et al., 2013b: 133). Defenders did not raise this issue again in multiple later articles</p> <p>Subsequent investigation could not replicate the claimed result in analyses of fatal MID's unencumbered by controversial practices (Mousseau, 2018: 178). New tests using multiple imputation did not restore the evidence for democratic peace (ibid: 180). In their rejoinder, Ray and Dafoe (2018) did not address this new evidence</p> <p>Subsequent investigation could not replicate the claimed result in analyses of fatal MID's unencumbered by controversial practices (2018: 180). New tests dropping on-going years did not restore the evidence for democratic peace (ibid.: 181). In their rejoinder, Ray and Dafoe (2018) did not address this new evidence</p> <p>An interaction term cannot distinguish a conditional relationship from a spurious one. New tests disaggregating the data yield no support for a conditional causal impact of democracy on peace (Mousseau, 2018: 181–182). In their rejoinder, Ray and Dafoe (2018) did not address this new evidence</p> |
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4 There was no democratic peace in the nineteenth century

According to available data, there seems to have been only one country with a contractualist economy in the nineteenth century, meaning before World War I (the United States) (Mousseau, 2018: 179). If correct, this means that there could not have been a peace between contractualist nations in this period. This fact yields a powerful quasi experimental opportunity: if democracy is a significant force for peace in the nineteenth century, then we would know that contractualist economy cannot explain the entirety of the democratic peace correlation.

Ray and Dafoe (2018) are explicit in their claim that a democratic peace existed in the nineteenth century, before World War I. However, they have not investigated their claim: they simply assert that “there can be little doubt” about how such an analysis “would turn out” (ibid.: 198). Perhaps unbeknownst to them, at about the time they were making their unsupported assertion, others were investigating it. Jenke and Gelpi report that “none of the measures of joint democracy appear to have any impact on interstate conflict prior to WWI” (2017: 2275).

5 New data and new tests

Defenders of democracy have criticized the handling of missing values in the measure for contractualism used in some of the studies that have overturned the democratic peace (Dafoe et al., 2013; Ray & Dafoe, 2018). This measure is based on per capita life insurance contracting, which is a direct measure of the causal mechanism of the intensity of societal dependency on contracting (Mousseau, 2009; North, Wallis, & Weingast, 2009: 159). In a few studies, missing values were singly imputed (Mousseau, 2013; Mousseau et al. 2013a; 2013b); in others they were multiply imputed (Mousseau, 2018), as my critics have recommended (Dafoe et al., 2013). However, both imputation procedures pose problems, because missing values are not missing at random (Yuan, 2014). As I noted early on, missing values reflect traditional status economy (2009: 66), a view my critics consider “reasonable” (Dafoe et al., 2013: 206).

It follows that missing values must be accounted for in this controversy, and without imputation of any kind. I therefore introduce two new binary measures of economic type: *Axial* and *Contractualist*. If economic norms theory is accurate, countries transitioning towards contractualist economy must have growth rates in life insurance contracting above growth rates in the overall economy, because the economy would be transforming towards contractualism, as well as growing. This expectation is corroborated in Figure 1, where we can see annual growth rates in life insurance contracting start going up, above economic growth rates, at about \$25 per capita, and return to a steady-state between \$165 and \$190 per capita.

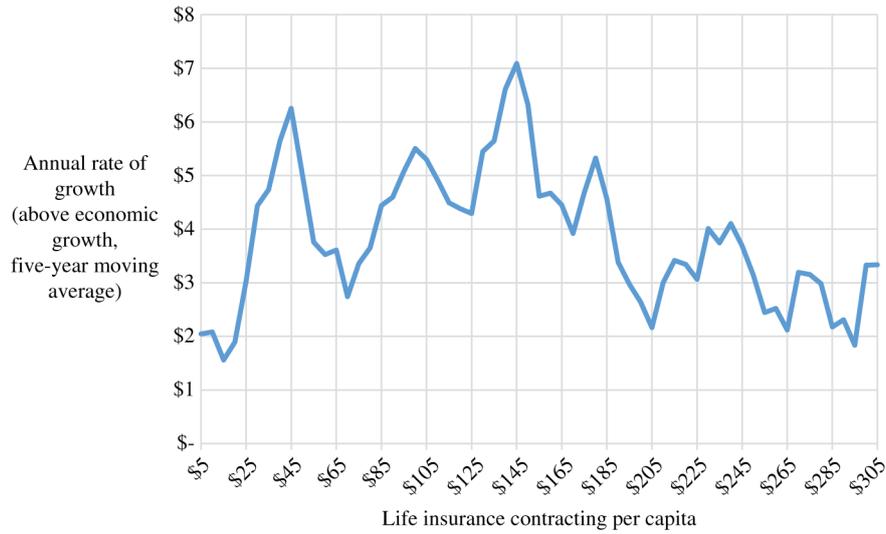


Figure 1: Growth rates in life insurance contracting.

The data thus suggest the span of \$25 to somewhere between \$165 and \$190 as indicative of transitional Axial economy, and values above the latter range as indicative of Contractualist economy. The specific cut-points make little difference, as few nations are in the \$20 to \$200 range in the data, and most of the 28 nations that crossed the \$165 threshold over the period of data availability of 1960–2010 did so rapidly, all reaching \$200, with an average of \$434, within seven years. I thus opt for \$165 as the upper threshold, which has the value of being roughly equivalent to the median cut-point adopted in a prior study (Mousseau, 2009) that relied on an earlier version of the life insurance data (Beck & Webb, 2003). For nations that enter the data as contractualist, net-emigration in prior years can be used to extrapolate when the nation became contractualist. By definition, in a contractualist economy the price of labor in the marketplace must be greater than that obtainable off the market from status networks, and net-immigration largely reflects this condition (Mousseau, 2018: 178).

With missing data reflective of traditional status economy (prior to entering the data), Table 2 presents nations’ economic types. The table corroborates the prediction that contractualist economy is both a cause of, and consolidates, the democratic rule of law, as almost every non-democratic nation in the table became democratic within eleven years of becoming contractualist (the single exception is Singapore), and no contractualist nation ever stopped being democratic. Consistent with the theory, many contractualist countries democratized during their axial periods, as economic changes caused political changes.³

Table 2: Nations with status, axial, and contractualist economies, 1776–2010.*

Nation	Axial years	Nation	Axial years	Nation	Axial years
United States	[†] –1776	Italy	<1960–1989	Trinidad	1993–2007>
Australia	[†] –1920	Portugal	1981–1990	Bahrain	1994–
Canada	[†] –1920	Singapore ^{°°}	1979–1994	Oman	1994–2003>
New Zealand	[†] –1920	Chile	1981–1996	Brazil	1995–
Netherlands	<1922–1922	Malaysia [°]	1979–1996	Croatia	1995–
Switzerland	<1926–1926	Greece	1980–1997 ⁺⁺⁺	Colombia	1996–
Norway	<1930–1930	Slovenia	1992–1997	India	1996–
Sweden	<1930–1930	Czech Rep.	1993–1998	China	1997–
Great Britain	<1931–1931	Mauritius	1997–1999	El Salvador	1999–2006>
Luxembourg	<1960–1960	Botswana	<2000–2000	Qatar	1999–
Denmark	<1960–1962	Hungary	1986–2001	Estonia	2003–2008>
Germany	<1960–1963	Slovakia	1993–2002	Lebanon	2003–
Japan	<1960–1963	Poland	1991–2003	Lithuania	2003–2008>
Finland	<1960–1967	South Africa	1979–	Namibia	2003–
Belgium	<1960–1972	Venezuela	1979–1983 [±]	Russia	2003–2009 ^{±#}
France	<1960–1975	Panama	1981–	Peru	2004–
Austria	<1960–1977	Mexico	1982–	Jamaica	<2005–
Ireland	⁺⁺ –1979	Thailand	1985–	Morocco	2006–2009>
Israel	1961–1981	Kuwait	1986–2009>	Indonesia	2007–2009>
Taiwan [°]	1979–1983	Uruguay	1989–	Latvia	2008–2008>
Korea, Rep. [°]	1979–1984	Argentina	1991–	Romania	2009–
Spain	1974–1987	Bulgaria	1991–2009> [#]		

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Cyprus 1988–1989 UAE 1992–1997>

*Axial is the intermediate category. Unless otherwise indicated, the last year of the axial period is the first year of the contractualist economy, and states that became contractualist remained so until the end of the observation period. Nation-years unlisted have status economies, unless they have populations smaller than 500,000; micro-nations should be treated as missing not at random. Axial periods are those between \$25 and \$165 in life insurance consumption per capita. Nations above \$165 per capita are considered axial rather than contractualist if they have informal economic flows, indicated when the ratio of the residuals of energy consumption–predicted flows to GDP-predicted flows is greater than one, signifying there are flows in an economy that are not monitored by the state, or are informal. While informal flows can be contractual, enforcement by private third-parties is costly and inefficient, so informal flows reflect the presence of status flows in an economy. Migration data used to extrapolate prior years of missing data by country. Life insurance data from Beck, Demirgüç-Kunt, and Levine (2010) gauged in constant (2005) international dollars using purchasing power parity rates to account for the fact that the needed death benefit to cover the typical household increases with the income level of an economy. For details in the construction of this measure, see Michael Mousseau, “Contract Intensity of National Economies (CINE), Version Mar-2019,” Harvard Dataverse, V1, doi.org/10.7910/DVN/8RPC9E. Unless otherwise noted, all contractualist nations listed have democratically-elected governments as defined with the Polity IV dataset, by convention scoring ≥ 6 on the *Polity2* measure (Marshall, Gurr, & Jaggers, 2012).

‘<’ / ‘>’ = start year/end year of axial period unknown.

† Nation had contractualist economy from year of sovereignty.

†† Start years of contractualist and axial economy unknown.

††† May no longer have a contractualist economy after 2008. Years 2009–2010 unknown.

± Axial period ended with resumption of status economy.

≠ Axial period contains some years of status economy.

° Nation became democratic within 11 years of its transition to contractualist economy.

°° Nation not democratic as of 2010.

There is nothing in economic norms theory that says contractualism is the only cause of democracy, and roughly half of all democratic nation-years lack contractualist economy (2018: 183). This fact suggests that it may not be democratic nations that are in peace, but rather contractualist ones, which are almost always democratic.

To test this prediction, I adopted the standard procedures embraced by Defenders of the democratic peace: pooled analyses of non-directional interstate dyads; logistic regressions of onset-years of militarized interstate disputes with fatalities; and with democracy gauged using the full 21-point Polity IV indicator of the less democratic state in the dyad (e.g. Dafoe & Russett, 2013). The new data on contractualist economy allow for the largest spatial and temporal domain yet examined in this controversy, as it includes every non-micro nation that existed over the broad temporal domain of 1920–2010. Since no contractualist dyad existed before 1920, the analyses largely include the whole population of cases, not simply a representative sample of it. They also include 94% of observations for which we otherwise have data missing due to other data sources, and without imputation of missing values in any way.

Model 1 in Table 3 presents the base model without contractualism, in accordance with standard specifications. As expected, Democracy (−0.07) is negative and significant. In Model 2 *Both Contractualist* yields perfect prediction, reflecting the striking fact that there has never been a fatal militarized conflict between two contractualist nations. With cases of perfect prediction omitted, the coefficient for Democracy is now zero.

Table 3: Democracy, contractualist economy, and fatal interstate disputes, 1921–2010.[†]

Fatal MID onset years ^{††}	Model 1		Model 2		Model 3	
	β	SE	β	SE	β	SE
Democracy	−0.07	0.02**	0.00	0.02	−0.01	0.02
Both contractualist	–	–	–	§	–	–
Both contractualist or axial	–	–	–	–	−3.28	0.85**
One or both axial	–	–	–	–	0.21	0.22
Capability ratio	−0.25	0.06**	−0.28	0.06**	−0.27	0.06**
Major power	1.72	0.27**	1.92	0.29**	1.85	0.27**
Contiguity	1.42	0.31**	1.96	0.47**	1.79	0.39**
Distance	−0.40	0.09**	−0.43	0.10**	−0.44	0.10**
System size	1.26	0.21**	1.02	0.30**	1.13	0.26**
Intercept	−1.43	0.69*	−1.38	0.86	−1.19	0.75
N		575,928		442,840		536,962
Clusters		14,057		13,249		14,035

[†]Logistic log-odds coefficients with standard errors corrected for clustering by (non-directional) dyad. Cubic spline corrections for temporal dependence included but not reported. All independent variables lagged one year behind the dependent variable. Data sources, measures, and summary statistics are reported in Appendix Table 5. Contractualist data for micronations, defined as those with population sizes less than 500,000, are not reliable and treated as missing not at random. Results identical using rare events logistic regression. Data are available at Harvard Dataverse at doi.org/10.7910/DVN/YJD6CA.

^{††}Dyadic Militarized Interstate Dispute data v. 3.1 (Maoz, Johnson, Kaplan, Ogunkoya, & Shreve, 2019; Palmer, D’Orazio, Kenwick, & McManus, 2019). First year of fatal disputes of originating (day 1) nations, with joiner dyads retained in the sample but not as events. Ongoing dispute years treated as missing as recommended by Dafoe et al. (2013): 204 and Ray and Dafoe (2018): 199–200.

[§]Variable yields perfect prediction and 13,489 observations not used.

** $p < 0.01$, * $p < 0.05$, two-tailed tests.

To sidestep perfect prediction, Model 3 treats axial nations as contractualist, with *One or Both Axial* included to control for the increased uncertainty in doing so. While the behavior of axial nations is less predictable than the behavior of contractualist and status nations, alliance with the contractualist hegemony is a core cause of change from status to axial economy, so axial nations, which are often allied with the contractualist hegemonic order, tend to avoid fighting each other and the contractualist nations (Mousseau, 2019). *Both Contractualist or Axial* (−3.28) is negative and highly significant, and Democracy (0.01) remains close to zero and is insignificant. Models 2 and 3 corroborate that democracy has no significant relationship with peace once contractualist economy is taken into consideration.

6 Conclusion

This article has shown that the state of evidence does not support the existence of a correlation of democracy with peace, in four simple ways: (1) no one has been able to show democracy significant in a clear-cut regression in analyses of fatal MIDs, crises, or wars; (2) every empirical defense of democracy has been rebutted, and the rebuttals remain uncontested despite multiple opportunities to contest them; (3) there is no democratic peace in the nineteenth century, when there were no contractualist dyads; and (4) new analyses with new data show, again, that democracies without contractualist economies are not in peace.

With this study, a total of thirty regressions are now in print documenting that the contractualist peace supersedes the democratic peace. The analyses herein largely include the entire population of cases, without imputation of any kind. The measure for contractualist economy is a direct – not a proxy – gauge of the underlying causal mechanism of micro-level dependency on contracts that require third party (state) enforcement. While errors can be made in the selected cut-points of this measure, I showed that such errors would be trivial because few nation-years have values near the cut-points.

Some Defenders may feel motivated to try again to save the democratic peace correlation. However, it is not enough to repeat prior claims that have been contested without recognizing, and addressing, the new contesting evidence. The stakes are too high: some have suggested that reports of the correlation of democracy with peace may have already influenced decisions to wage war for democracy (Russett, 2005: 396). Unless and until democracy is shown significant in a clear-cut regression, there are no scientific grounds for deeming the democratic peace correlation as existing in the state of knowledge.

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Appendix

Table 4: Assertions made in this controversy that are contrary to documented fact.

	Asserted fact	Documented fact
1	Economic norms theory is “about the pacifying impact of economic interdependence,” and is thus “not a new argument” (Ray, 2013: 199). Repeated by Ray and Dafoe (2018: 197). No supporting citation provided	Anyone can read any article on economic norms theory and see that there is nothing about economic interdependence causing peace in this theory. This fact has been clarified repeatedly (Mousseau, 2009: 72–74, 2013: 194)

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| <p>2 All “dyad-years with an ongoing conflict” were (incorrectly) set to 0 in Mousseau (2013) (Dafoe et al., 2013: 204). Repeated by Ray and Dafoe (2018: 199–200)</p> <p>3 Ray and Dafoe (2018: 194–195) assert that economic norms theory assumes, “that policymakers as well as interest groups and the general public will consistently and accurately perceive varying degrees of contract intensity” across nations. This is a “fundamental problem,” they say, because it is “hard to believe” (194); and because it means that the theory cannot be subject to experimental testing (201)</p> <p>4 Ray and Dafoe (2018: 195–196) assert that economic norms theory does not predict democracy, and that Mousseau “acknowledges that contractualism does not lead to democratic transitions.”</p> <p>5 Ray and Dafoe (2018: 195–196) assert that Mousseau has “endorsed” the view “that democratic political institutions make contract-intensive economies more likely to emerge”</p> <p>6 Ray and Dafoe (2018: 199) assert that Mousseau (2009) (incorrectly) included joiners of ongoing MID as events in the dependent variable</p> | <p>Anyone can examine Mousseau’s Mousseau (2013) publicly-available data and see that dyad-years with an ongoing conflict were <i>not</i> set to 0. Ongoing years were retained as 0 only if no new MID began: if a new MID began, dyad-years with an ongoing conflict were (correctly) retained as 1 (Mousseau, 2018: 180)</p> <p>Anyone can read any article on economic norms theory and see that there is nothing in this theory about any actor perceiving “varying degrees of contract intensity” across nations. Peace happens from predicted interests among nations, without perceptions of any kind (Mousseau, 2009: 63, 71, 75, 83, 2013: 189). Ray and Dafoe (2018) provide no supporting citation for their assertion that interstate perceptions play a role in economic norms theory</p> <p>Economic norms theory explicitly predicts democracy from contractualist economy (Mousseau, 2009: 63, 70–71, 2013: 186–188). Ray and Dafoe (2018) provide no supporting citation for their contrary assertion</p> <p>Ray and Dafoe’s assertion is contrary to the very core of economic norms theory, which treats the origins of contractualist economy exogenously (Mousseau, 2009: 59, 2013: 187). Ray and Dafoe (2018) provide no supporting citation for their opposing assertion</p> <p>Anyone can examine Mousseau’s Mousseau (2009) publicly-available data and see that he did not include joiners of ongoing MID as events of the dependent variable</p> |
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Table 5: Summary statistics and correlations with contractualist economy, 1921–2010.

Variable	Obs.	Mean	Std.	Min	Max	Correlation with both contractualist
Both contractualist ^a	456,329	0.03	0.17	0.00	1.00	1.00
Both contractualist or axial ^b	536,962	0.06	0.24	0.00	1.00	1.00
Democracy ^c	575,928	−3.62	6.11	−10.00	10.00	0.40
Capability ratio ^d	575,928	2.02	1.52	0.00	9.87	−0.02
Major power ^e	575,928	0.09	0.29	0.00	1.00	0.14
Contiguity ^f	575,928	0.03	0.18	0.00	1.00	0.06
Distance ^f	575,928	8.21	0.80	1.61	9.42	−0.10
System size ^g	575,928	−1.77	0.49	−2.13	0.00	0.02

^aSee Table 1 for list of contractualist nations. Axial periods treated as missing.
^bSee Table 1 for list of axial nations. Includes mixed with one state contractualist and one state axial.
^cPolity2 variable, lower of both states, Polity IV data, v. 2013 (Marshall et al., 2012).
^dCorrelates of War National Materials Capability index, higher/lower, logged (Singer, Bremer, & Stuckey, 1972).
^eAt least one state is identified by the Correlates of War as a major power: Great Britain, France, Russia/USSR; and various years for China, Germany, Italy, and Japan (Small & Singer, 1982).
^fContiguity 150 miles or less of open water. Inter-capital distance logged (Stinnett, Tir, Diehl, Schafer, & Gochman, 2002).
^g(Hegre, 2008).

Notes

- The main standing challenge comes from Gibler (2007, 2012). Gartzke (2007) is often cited as a challenge to the democratic peace, but he offers no theory for how his combined variables can cause democracy, a prerequisite for inferring the democratic peace as spurious (Blalock 1979: 474).
- The remaining content of Ray and Dafoe’s (2018) rejoinder is not addressed in this article because it consists largely of unsupported assertions that are contrary to already-documented fact. These are chronicled in Appendix Table 4.
- A country can have a contractualist economy with a minority region of axial or status economy, especially if it has a federal-type of governing structure. The American South before the 1960s is an example.

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