



Assessing the association between *Corporate Financial Influence* and implementation of policies to tackle commercial determinants of non-communicable diseases: A cross-sectional analysis of 172 countries

Luke N. Allen^a, Simon Wigley^b, Hampus Holmer^{c,d,*}

^a London School of Hygiene and Tropical Medicine, Department of Clinical Research, London, UK

^b Department of Philosophy, Bilkent University, Ankara, Turkey

^c Department of Global Public Health, Karolinska Institute, Stockholm, Sweden

^d Center for Policy Impact in Global Health, Duke University, NC, USA

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ABSTRACT

Objective: Non-communicable diseases (NCDs) are the leading cause of global death and disability. Tobacco, alcohol, and unhealthy foods are major contributing risk factors. WHO Member States have unanimously endorsed a set of 12 policies designed to constrain the sale of these commodities, however, there are myriad case studies of commercial entities seeking to undermine effective legislation in order to protect their profits. We set out to quantify the association between corporate financial influence and implementation of commercial policies. **Methods:** We generated policy implementation scores for all 194 WHO Member States using data from the 2015, 2017, and 2020 WHO NCD Progress Monitor Reports. We used publicly available data to create a novel *Corporate Financial Influence Index* (CFII) that quantifies the opportunity for corporations to use their financial resources to directly influence policymaking in each country. We reported policy implementation trends over time and used random effects multivariate regression to test the association between policy implementation and CFII for each country, while controlling for broad set of economic, cultural, historical, geographic, and demographic factors. **Findings:** Implementation of the 12 WHO-backed commercial policies has risen over time, but remains low at approximately 40%. Progress is reversing for alcohol policies. CFII explains around a fifth of the variance in global implementation. For every 10% rise in CFII, implementation falls by approximately 2% (95%CI 0.90 to 3.5, $p < 0.001$).

Conclusion: Our quantitative global analysis suggests that financial corporate influence is negatively associated with implementation of policies that seek to restrict the marketing, sale, and consumption of unhealthy (but profitable) commodities. In the context of anemic international progress tackling NCDs, greater attention should be paid to managing regulatory opportunities for overt and covert corporate financial influence as a core plank of the global NCD response.

1. Introduction

A growing body of work describes the myriad channels through which corporations seek to undermine effective public health measures to constrain the sale and marketing of unhealthy commodities (Allen, 2020; Gilmore et al., 2015; Hawkins and Holden, 2016; McKee and Stuckler, 2018; Miller and Harkins, 2010). Commercial determinants of health (CDOH) researchers are moving towards holistic and complexity-informed assessments of the power yielded by corporations and the impact levied by products and practices including the tax, labor,

logistics, and environmental domains (Allen, in press). Whilst this move away from assessments of simplistic and unidimensional conceptualizations of corporate power is welcome, important basic work remains undone: we still do not have global empirical evidence that quantifies the association between corporate financial donations and policy implementation. We have plentiful individual case studies, but these are insufficient for WHO to take a firm normative stance or develop policy recommendations on corporate practice.

In this study we aimed to quantify whether health policy implementation is associated with legislative opportunities for overt and

* Corresponding author. Department of Global Public Health, Karolinska Institute, Stockholm, Sweden.

E-mail addresses: luke.allen@lshtm.ac.uk (L.N. Allen), wigley@bilkent.edu.tr (S. Wigley), hampus.holmer@ki.se (H. Holmer).

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covert financial donations to politicians at the national level, using internationally comparable metrics for a large sample of WHO member states.

All 194 WHO Member States have endorsed a set of 19 “Best Buy” policies to address key non-communicable disease (NCD) risk factors (World Health Assembly, 2013; World Health Organization, 2017a). Of these, 12 policies are designed to tackle the commercial determinants of NCDs by targeting tobacco, alcohol, foods high in fats and salt, child-focused junk food marketing, and marketing of breastmilk substitutes (World Health Organization, 2017b).

WHO monitors the implementation of these commercial policies through regular NCD country capacity surveys, completed by national ministries of health. WHO has produced three global progress monitor reports – in 2015, 2017, and 2020 (World Health Organization, 2015, 2017c, 2020a) – providing country-level assessments of whether each of the 12 commercial policies has been ‘fully implemented’, ‘partially implemented’, or ‘not implemented’ in each Member State.

These WHO data on commercial policy implementation provide a unique opportunity to examine whether indicators of corporate financial influence over policymaking processes are quantitatively associated with implementation of key commercial policies, according to the three policy clusters delineated in Box 1.

To elucidate the association between corporate financial influence over policy-making and the implementation of commercial policies we aimed to perform three sets of exploratory analyses:

- 1) To characterize implementation trends over time for tobacco, alcohol, and food-related policies using descriptive statistics.
- 2) To develop an index measuring *corporate financial influence* over policy-making, and assess the association between implementation of commercial policies and this index using multivariate regression – controlling for a range of economic, political and geopolitical variables – and conduct sub-analyses to assess the association between corporate financial influence and;
 - a) each of the three policy clusters (tobacco, alcohol, food)
 - b) each of the 12 individual policies
- 3) To identify countries with policy implementation levels that are higher or lower than would be expected given their geopolitical

characteristics; evaluated by creating a multivariate model and a modified Bland Altman chart.

We hypothesised that countries with the highest levels exposure to corporate financial influence would have the lowest levels of policy implementation.

2. Methods

2.1. Commercial policy implementation scores

We extracted data on the implementation status of the 12 commercial policies outlined in Box 1 (full descriptions are provided in Appendix section 1) for all 194 Member States from the 2015, 2017, and 2020 WHO NCD Progress Monitor reports. These data were transcribed into a spreadsheet and double-checked by two authors (LA and SW).

Following the approach of WHO (World Health Organization, 2020b), and Allen and colleagues (Allen et al., 2020, 2021a) we constructed policy scores for each country, according 1 point for each fully implemented policy, 0.5 points for each partially implemented policy, and 0 points for non-implemented policies and those for which no data were available. We constructed overall commercial policy aggregate scores for each country, ranging from 0 to 12, as well as policy cluster scores for tobacco (range 0–5), alcohol (range 0–3) and food policies (range 0–4). One policy – tobacco mass media campaigns – was not included in the WHO dataset in 2015. Implementation scores were generated by dividing the number of points by the maximum possible number of points.

2.2. Commercial influence

We aimed to assess whether *direct* commercial political influence – i. e. the opportunity for corporations to influence policy-making processes by making financial payments to politicians and their parties (independent variable) - is associated with implementation of commercial NCD policies (dependent variable). Our analysis explores the narrow conceptual space concerning whether corporate actors wield outsized financial influence over policymakers, potentially marginalizing the arguments and lobbying efforts of non-commercial actors, such as public

Box 1

The three clusters of globally-backed policies targeting commercial determinants

Tobacco

- Tobacco taxation
- Smoke-free places
- Plain packaging and graphic warnings
- Tobacco advertising bans
- Tobacco mass media campaigns

Alcohol

- Alcohol sales restrictions (i.e. licensing regulations)
- Alcohol advertising bans
- Alcohol taxation

Foods

- Salt reduction
- *Trans*- and saturated fat reduction
- Child junk food marketing restrictions
- Restrictions on the marketing of breast-milk substitutes

health advocates (OECD, 2021).

Our analysis builds on a literature review conducted at the study planning stage; reported fully in Appendix 2 and in the published study protocol (Allen et al., 2021b). We found that despite being a well-described conceptual space in the political science and global health literature (Allen, 2020; Briffault, 2008; Crepaz, 2017; de Figueiredo and Richter, 2014; Falguera et al., 2014; Gilens et al., 2021; Hanefeld et al., 2019; Madureira Lima and Galea, 2018; McKee and Stuckler, 2018; Nestle, 2013; Wiist, 2011), there are no internationally comparable metrics that quantify the opportunity (defined by the regulatory environment) for companies to exert direct financial influence over policymakers. The closest metric that we identified was Lima and Galea's *corporate permeation index* (CPI) which includes a wide variety of input variables (Madureira Lima and Galea, 2019) meaning that the scope of that metric extends well beyond the ability of corporations to directly influence the policymaking process. Rather, CPI captures "the extent to which corporations are embedded in the political, legal, social, economic and cultural fabric of a given society". Their metric covers 146 of the 194 WHO Member States.

Building on the work of Lima and Galea, we developed a new *Corporate Financial Influence Index* (CFII) to capture the opportunity, defined by formal regulations, for corporations to directly influence policy-making. To that end we used six input indicators (presented in Box 2) that were identified by our review as meeting four pre-determined criteria: tight conceptual alignment, high data availability (>80% of WHO Member States); robust data collection methods; and internationally comparable outcome measures. Full details on the independent dual-review process for selecting these variables are presented in Appendix 2.

These six indicators all conceptually map to the political-commercial nexus; have strong internal and external validity; and cover 172 countries (89% of WHO Member States). This encompasses all sovereign states except the 22 microstates listed in Appendix section 2. We used structural equation modelling to identify the latent factor underlying these six input indicators. The factor loadings were checked to ensure they were statistically significant and of sufficient magnitude. In addition, goodness of fit statistics were used to determine whether the latent variable was sufficiently related to the input variables. The model was then used to produce a factor score reflecting the level of corporate financial influence in each country. Those scores were then rescaled to range from 0 (least corporate influence) to 100 (most corporate influence). This procedure is described in detail in Appendix section 2.

2.3. Control variables

In assessing the association between corporate financial influence and commercial policy implementation we controlled for a broad set of

economic, cultural, historical, geographic, and demographic factors derived from earlier work on international policy implementation (Allen et al., 2021a; Baum et al., 2018; Mackenbach and McKee, 2013; Nunn and Puga, 2012): GDP per capita, urbanization (both capture level of economic development), population aged >65 years (captures stage in the epidemiological transition), and level of democracy (captures the extent to which political leaders are selected via competitive multiparty elections), which are all time-varying controls; and continent (captures fixed factors specific to each region), ethno-linguistic fractionalization (captures the potential impact of cultural heterogeneity on solidarity), legal origin (captures the extent to which the entrenched legal system favours commercial activity), Small Island Developing States (captures the unique environmental and food supply challenges that confront such states), and Muslim population (captures pre-existing alcohol policy preferences), which are all time-invariant controls. Each of these variables may be separately associated with level of corporate influence and level of implementation. We included year dummies to address global trends in terms of the outcome variable and the independent variables of interest. Table 1 summarises the provenance of all data sources and further rationale is provided in Appendix section 3.

Table 1
Variables and their data sources.

	Source	Countries	Years
Controls			
GDP per capita	Global Burden of Disease 2019 Covariates (GBD Collaborative Network, 2020)	186	2015, 2017, 2019
Population aged 65+ (%)	World Development Indicators (World Bank, 2021)	183	2015, 2017, 2019
Urban population (%)	World Urbanization Prospects 2018 (United Nations, n.d.)	194	2015, 2017, 2019
Level of democracy (Multiplicative Polyarchy Index)	Varieties of Democracy (V-Dem) Dataset version 11.1 (Coppedge and et al., 2021)	172	2015, 2017, 2019
Muslim population in 2000 (%)	McCleary and Barro (n.d.)	189	Fixed factor
Ethno-linguistic fractionalization in 2005	Desmet et al. (2009)	194	Fixed factor
Small Island Developing States	UN Sustainable Development Goals (UN SDG, n.d.)	194	Fixed factor
Legal origin	La Porta et al. (2008)	194	Fixed factor
Continent	UN Statistical Yearbook (United Nations Department of Economic and Social Affairs, 2017)	194	Fixed factor

Box 2

Indicators: regulatory opportunities for corporate financial influence over policy-making

- Disclosure of campaign donations:** Are there disclosure requirements for donations to national election campaigns? Source: V-Dem Dataset v11.1 (Coppedge and et al., 2021)
- Public campaign finance:** Is significant public financing available for parties' and/or candidates' campaigns for national office? Source: V-Dem Dataset v11.1 (Coppedge and et al., 2021)
- Corporate campaign donations:** Is there a ban on donations from domestic or foreign interests to political parties or candidates? Source: IDEA. Political Finance Database, 2020 update (IDEA, n.d.)
- Disclosure by politicians:** Do the law or regulations of the country require politicians to provide either financial and/or business interests disclosures and are the disclosures publicly available? (Source: Djankov et al., 2010)
- Legislature corrupt activities:** Do members of the legislature abuse their position for financial gain? Source: V-Dem Dataset v11.1 (Coppedge and et al., 2021)
- Executive oversight:** If executive branch officials were engaged in unconstitutional, illegal, or unethical activity, how likely is it that a body other than the legislature, such as a comptroller general, general prosecutor, or ombudsman, would question or investigate them and issue an unfavorable decision or report? Source: V-Dem Dataset v11.1 (Coppedge and et al., 2021)

2.4. Statistical analyses

We used descriptive statistics to characterize implementation trends over time for the commercial policies including mean implementation scores for each WHO geographic region and World Bank income group. We performed the following regression analyses:

Ia: Aggregate policy score

Aggregate score for all 12 policies regressed on CFII.

Ib: Policy clusters

Each commercial policy cluster (tobacco, alcohol, and food) separately regressed on CFII.

Ic: Individual policies

All 12 individual commercial policies separately regressed on CFII.

We used random effects generalized least squares regressions to capture between- and within-country effects, and performed each regression with and without controls. We removed the tobacco mass media policy from all regression analyses as this policy was not included in the 2015 NCD Progress Monitor (see [Appendix section 4](#) for a complete description of the regression model).

2.5. Identification of outliers

We used the results from Ia and Ib to construct prediction-based modified Bland-Altman plots for 2019, plotting each country's WHO-ascertained policy implementation score on the x axis, and predicted score on the y axis, based on the regression equation. We set 95% limits of agreement to identify over- and under-performing countries.

2.6. Sensitivity analyses and robustness checks

We repeated the three regression models using Lima and Galea's Corporate Permeation Index, plus a version of CFII that includes the registration of lobbying activities (originally excluded because data are only available for 127 countries), and a further version of CFII that drops 'disclosures by politicians' data (as these are only available for 2010). We used our random effects model to test whether the prevalence of smoking, alcohol use, hypertension, and adult and child obesity are respectively associated with implementation of tobacco, alcohol, salt, fat, and child marketing policies. We repeated the three regression models and the additional risk factor prevalence regression using multiple imputation to address missing data.

We repeated the regression models including level of corruption as a control variable given that it is a potential confounder for CFII, using the *Political Corruption Index* from the V-Dem dataset, version 11.1. We performed multiplicity tests for all regression models.

We produced variable and coefficient matrices for regression model Ia in order to check for collinearity. Finally, we performed the Robust Hausman test for random vs. fixed effects.

2.7. Data management and statistical principles

All raw data and code are publicly available on GitHub at: <https://github.com/drlukeallen/CDOH-policy-implementation>. We used a 0.05 level of statistical significance, cluster-robust standard errors and 95% confidence intervals. All analyses were performed on Stata version 14.2 and R version 4.1.0. We followed a published statistical analysis plan ([Allen et al., 2021b](#)) which was developed in line with the DEBATE reporting guidelines for observational studies ([Hiemstra et al., 2019](#)). As this study uses publicly available data ethical approval was not required.

3. Results

3.1. Global trends in commercial policy implementation over time

None of the 194 countries had fully implemented all of the commercial policies in 2015, 2017 or 2020. Excluding the tobacco mass media policy that was only reported in 2017 and 2020, the average country had *fully* implemented 2.3/11 of the commercial policies in 2015 (21%), rising to 2.7 (24.9%) in 2017, and 2.9 (26.3%) in 2020. The average country had *fully or partially* implemented 5.8 (52.3%) of policies in 2015, 6.5 (59.4%) in 2017, and 6.6 (59.6%) in 2020.

The aggregate policy implementation score that we constructed for each country (full implementation = 1-point, partial implementation = 0.5-points; maximum = 12-points) was normally distributed and ranged from 4.2% (South Sudan, partial implementation of one policy) to 87.5% (Turkey, full implementation of nine policies and partial implementation of three), with a mean of 41.9% and a median of 41.7%. [Appendix section 1](#) ranks all 194 countries by their 2020 score. Implementation was highest in high-income countries and the European region, and lowest in low-income countries and the African region for all three years (full results in [Appendix 1](#)).

Overall, tobacco policies were the most widely implemented (average policy implementation score of 46.3% in 2020, up from 37.6% in 2015), while implementation of alcohol policies fell between 2015 and 2020 (from 47.1% to 43.3%), and food policies rose between 2015 and 2020 (from 27.8% to 35.3%) but remain the least widely implemented.

Tobacco plain packaging and graphic warnings were the highest scoring policies (both 62.9%), whereas tobacco mass media campaigns, child junk food marketing restrictions, salt policies and alcohol advertising bans all had scores around 30% ([Fig. 1](#)).

3.2. Corporate financial influence index (CFII)

[Fig. 2](#) illustrates the global distribution of CFII scores. The results may seem counterintuitive as capitalist countries with neoliberal policies such as the USA and UK tend to have highly developed political financing regulations and oversight facilities. As CFII measures a given country's ability to prevent undue financial influence over policy-making, scores are highest in fragile states lacking mature checks and balances. Those states are less able to prevent foreign and domestic corporations from playing outsized roles in policymaking. A full CFII country ranking is provided in [Appendix section 2](#).

3.3. Association between corporate financial influence and commercial policy implementation

In our first multivariate model we found that CFII was negatively associated with aggregate policy implementation score ([Fig. 3](#), Panel A). For every 10-percentage point increase in CFII, policy implementation fell by 2.21% (95%CI 0.90 to 3.49, $p < 0.001$). CFII explained 22.6% of the variance in policy implementation scores in our unadjusted model. The overall model – including all the control variables – explained 54.6% of the variance in policy implementation.

In our second multivariate model, we found that CFII was negatively associated with each of the three policy clusters ([Fig. 3](#), Panels B, C, and D).

3.4. Individual policies and CFII

The only statistically significant associations in the fully adjusted models were for child food marketing ($p < 0.001$) and tobacco taxation ($p < 0.01$). Both were negatively associated with CFII. Complete results are reported in [Appendix section 5](#).

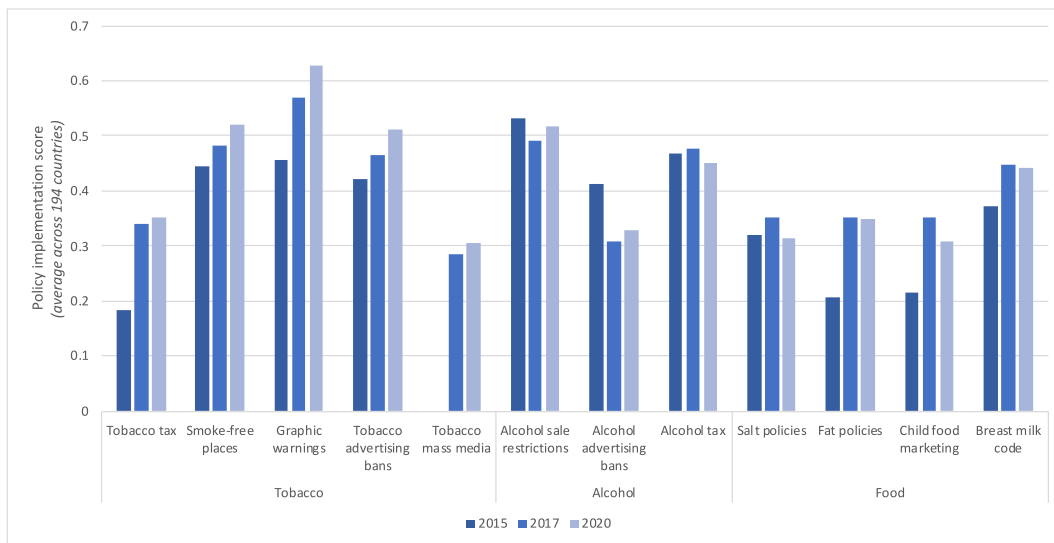


Fig. 1. Mean global policy implementation for each commercial policy in 2015, 2017, and 2020.

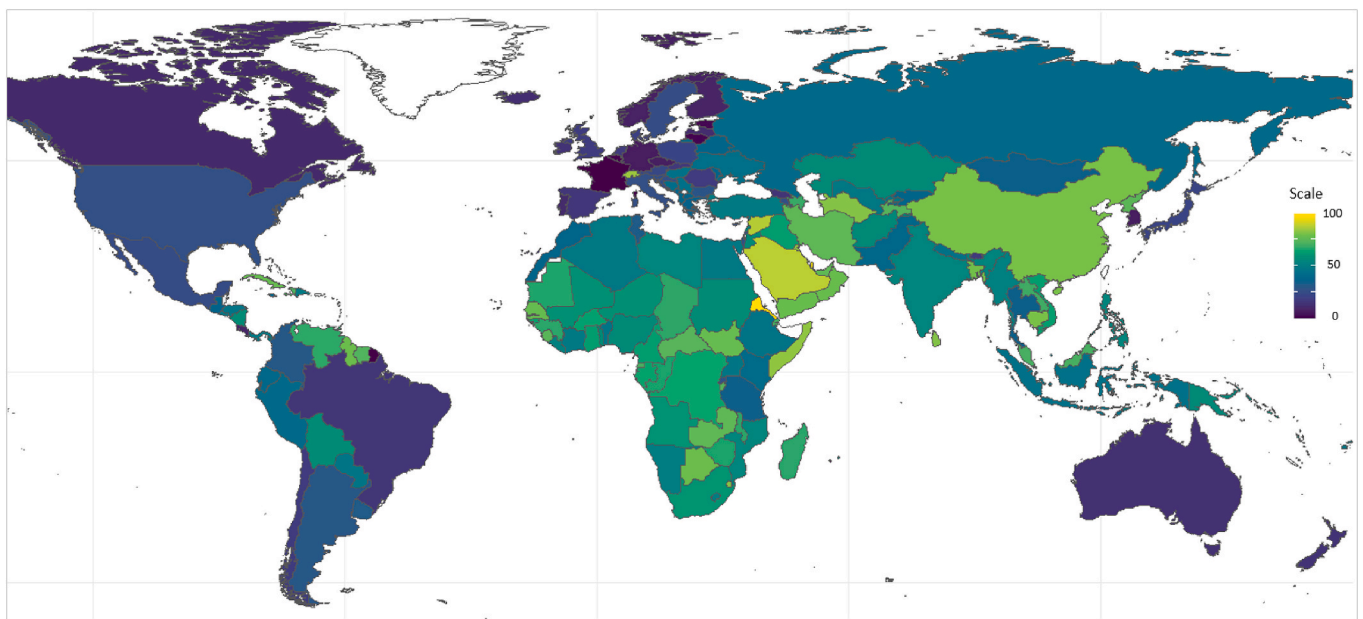


Fig. 2. Global map of Corporate Financial Influence Index.

3.5. Identification of outliers

Our prediction-based Bland-Altman plot identified Iran and Madagascar as over-performing countries, and Algeria, Bhutan, North Korea, and South Sudan as the main underperforming countries i.e. they had lower scores than other countries with similar economic, demographic, geographic, and sociocultural characteristics (Fig. 4). China, Indonesia, Japan, and the USA stand out as large countries with lower-than-expected scores.

3.6. Sensitivity analyses and robustness checks

All sensitivity analyses, robustness checks, and variable and coefficient matrices are reported fully in Appendix section 6. The magnitude and signal of the associations of our regression models did not change materially with Lima and Galea’s Corporate Permeation Index; the version of CFII that included registration of lobbying activities; the

version of CFII that dropped disclosures data; political corruption as an additional control variable; or with multiple imputation to address missing data. Multiplicity tests indicated that it is unlikely that our results are affected by Type I error. Correlation matrices indicate that the results for our independent variable of interest (CFII) are not influenced by collinearity. The Robust Hausman test indicated that the random effects specification is appropriate for our regression analyses.

Our risk factor analysis showed that tobacco and child marketing policies were not significantly associated with national levels of smoking and childhood obesity after accounting for CFII. Fat reformulation policies were more likely to have been implemented in countries with higher obesity prevalence. Salt reformulation and alcohol policies were inversely associated with the prevalence of hypertension and alcohol consumption. Full results are presented in Appendix section 6.

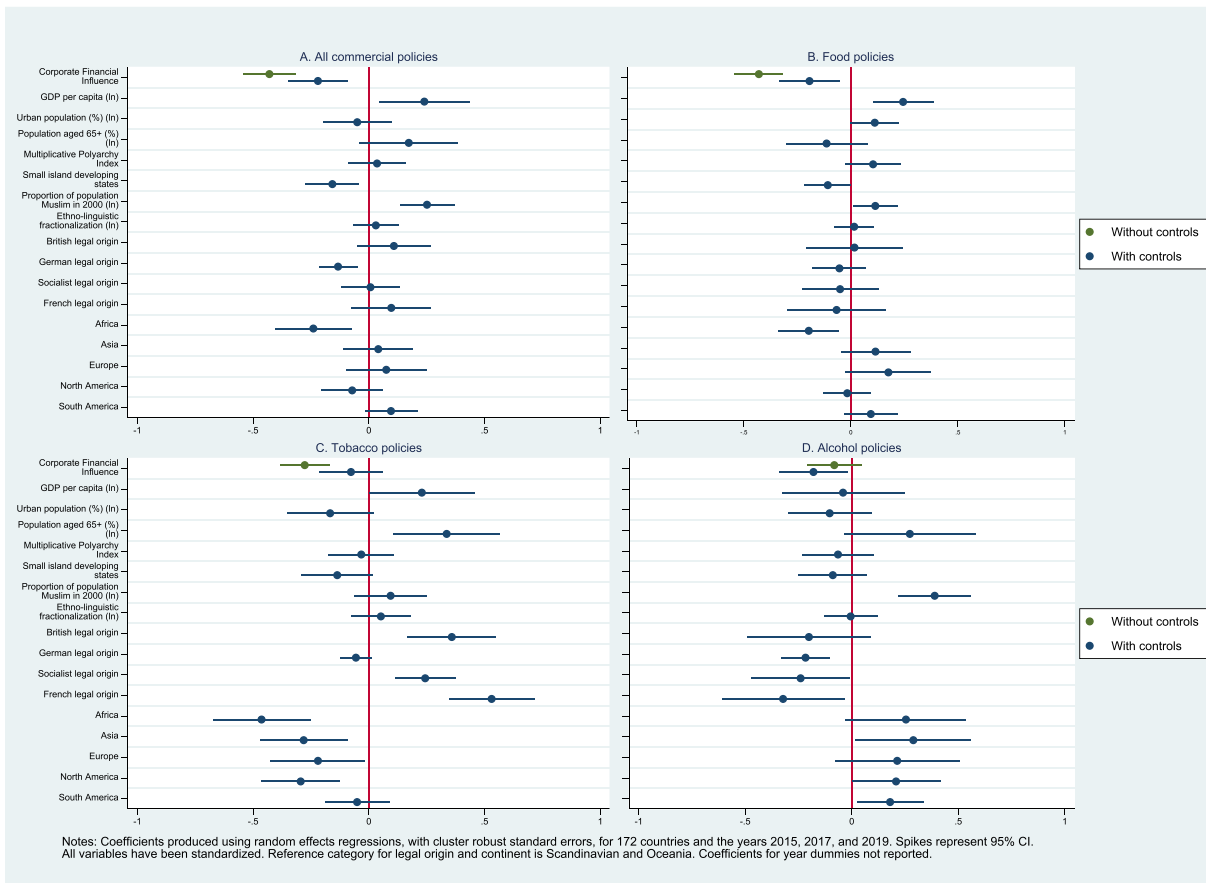
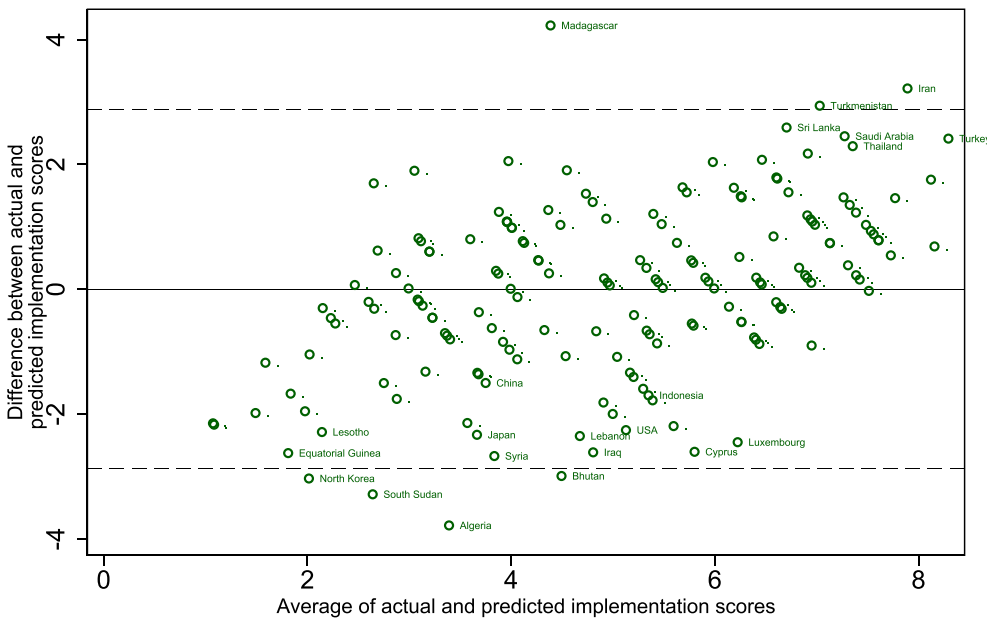


Fig. 3. Coefficient plot for commercial policy implementation.



Notes: Points above the zero line do better than predicted and vice versa. 95% of all points lie between the dashed lines. Predicted values based on regression model with all covariates: GDP per capita, urbanization, population aged 65+, Multiplicative Polyarchy Index, Small Island Developing States, Muslim population, ethno-linguistic fractionalization, legal origin, continent, and year. The concordance correlation coefficient for actual vs predicted is 0.723 (95% CI 0.659 to 0.787, $p < 0.0001$).

Fig. 4. Prediction-based Bland-Altman plot for commercial policies in 2020.

Notes: Points above the zero line do better than predicted and vice versa. 95% of all points lie between the dashed lines. Predicted values based on regression model with all control variables (GDP per capita, urbanization, population aged 65+, Multiplicative Polyarchy Index, Small Island Developing States, Muslim population, ethno-linguistic fractionalization, legal origin, continent, and year). The concordance correlation coefficient for actual vs predicted is 0.723 (95% CI 0.659 to 0.787, $p < 0.0001$).

4. Discussion

The average country had implemented fewer than one in four policies targeting commercial vectors in 2020, however – with the exception of alcohol regulations - implementation is rising over time. Progress is uneven, with low-income, African, and Small Island Developing States among the least likely to have implemented commercial NCD policies. China, Indonesia, Japan and the USA stood out as large countries that are underperforming in terms of implementation of policies targeting commercial vectors, placing more than 2.9 billion people at risk. Madagascar, Iran, Sri Lanka and Turkmenistan are punching above their weight. Whilst Iran and Turkmenistan have strong central governments, we are not clear whether this is an important explanatory factor, or why Madagascar performed so well. Future in-depth country research should explore how and why these polities achieved such strong implementation scores compared to their peers. Most former-Soviet states performed well, as they tend to do with all NCD policies (Allen et al., 2021a).

Our new *corporate financial influence index* explained over a fifth of the variance in policy implementation scores. CFII is a proxy for the vulnerability of policymaking processes to influence by corporations. We found that countries with the highest levels of vulnerability to corporate financial influence over policy-making were the least likely to have implemented policies to tackle commercial determinants. This finding aligns with decades of speculation. We note that ‘business-friendly’ countries commonly held up as heavily exposed to industry lobbying (e.g. USA, UK, Japan) also tend to have well developed campaign finance regulations, lobbying registers, and oversight mechanisms (Crepaz, 2017; Falguera et al., 2014). In contrast, low-income countries, fragile states, and non-European autocracies have the weakest defenses against direct corporate influence, and our research suggests that such weakness is independently associated with lower levels of implementation of policies targeting commercial determinants of NCDs. This finding is particularly worrying as these countries are facing the most rapid proportional rise in the burden of premature NCD morbidity and mortality (Institute for Health Metrics and Evaluation, 2020).

Compared with Lima and Galea’s *corporate permeation index* which was designed to capture “the extent to which corporations are embedded in the political, legal, social, economic and cultural fabric of a given society” (Madureira Lima and Galea, 2019) our new index includes an additional 26 countries and – more importantly – focuses on opportunities for direct corporate financial influence over policy-making. Our input variables capture the presence of laws and regulations preventing direct financial influence, enforcement by an independent body, and public funding of candidates and parties, acting as a counterbalance to the influence of private money in politics, thereby limiting the opportunity for companies to have outsized influence. The latter is not a legal limitation on companies, but it does circumscribe their opportunity to gain unequal influence over policymaking processes.

Our findings support previous qualitative work (; Capewell and Lloyd-Williams, 2018; Kickbusch et al., 2016; McKee and Stuckler, 2018; Soskolne and Baur, 2018) on the link between corporate influence over politicians and (the lack of) implementation of policies that seek to restrict the marketing, sale, and consumption of unhealthy – but profitable – commodities. We are hopeful that further research can shed more light on the association between vulnerability to corporate influence and lack of policies regulating commercial determinants of NCDs which we have identified. In particular, further research is needed to better understand the mechanisms underlying this association, in order to better design future interventions aimed at improving policy implementation.

4.1. Limitations

In this study we have used publicly available data to assess policy implementation and its association with opportunities for financial

influence afforded to corporations by the national regulatory environment. We note that companies are able to influence policymakers through a wide range of other non-financial channels (Allen, in press; Anaf et al., 2017; Capewell and Capewell, 2011; Gilmore et al., 2015; Mialon, 2020). By including all countries with available data and using data points across three years, we have sought to minimize the impact of inaccurate data points to instead examine broader trends and associations. The WHO Progress Monitor data are based on nationally self-reported surveys and therefore may be open to overestimation of policy implementation, however WHO does perform data checks. Robustness checks previously performed on a small subset of countries by the NCD Alliance found good overall levels of agreement (Allen et al., 2021a). Using 0, 0.5, and 1.0 for policy implementation scoring was crude, but followed the approach used by WHO and previous studies. Our index (CFII) is an attempt at capturing a range of relevant indicators of direct corporate influence, but there are important aspects for which there are presently no data available. Specifically, while several indicators exist regarding mechanisms to prevent undue financial influence, there is a dearth of information about whether decisions have actually been influenced (this is partly because such influence often occurs behind closed doors). Therefore, we have used the former as proxies for the latter. In our analysis we have used an extensive set of control variables to avoid confounding, but further research is needed to further examine the links between commercial policy implementation and corporate financial influence, as well as ways to address this association. Whilst there are myriad examples of corporate actors using their financial clout to undermine NCD regulations (Allen, 2020) it is important to note that policymaking is a complex process and corporations do not universally seek to undermine effective NCD policies (OECD, 2021; Allen, 2022).

5. Conclusions

Our quantitative global analysis aligns with decades of qualitative work, finding that corporate financial influence over politicians is negatively associated with implementation of policies that seek to restrict the marketing, sale, and consumption of unhealthy (but profitable) commodities. In the context of anemic international progress tackling NCDs, greater attention should be paid to managing regulatory opportunities for overt and covert corporate financial influence as a core plank of the global NCD response.

Credit author statement

Luke N Allen: Conceptualisation, Methodology, Validation, Writing – original draft, Writing – review & editing, Supervision. **Simon Wigley:** Conceptualisation, Methodology, Software, Formal analysis, Data curation, Visualization, Validation, Writing, Writing – review & editing. **Hampus Holmer:** Conceptualisation, Methodology, Writing – review & editing.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2022.114825>.

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