On Socially Responsible GVC Governance Structures:
Outsourcing vs. Internalization in the First Mile

ABSTRACT

Which vertical governance structures should MNCs use to improve social and environmental conditions along their GVC suppliers? Currently, the conventional governance structure used by MNCs to organize their GVCs is via a series of *cascading contracts* where responsibility for the various stages of production is diffused along the value chain. However, while the cascading contract setup is effective at rapidly detecting and resolving manufacturing/quality issues, it is far less effective at detecting and responding to social and environmental problems that arise in the production process. In this paper, we argue that *partial internalization*, especially in the first mile, can be a more socially responsible governance structure than the current cascading contracts setup. First, we develop a formal analytical model to identify the conditions under which partial internalization is expected to outperform the conventional cascading contracts approach, both economically and socially. Second, we derive two hypotheses from our model and outline the empirical strategy we intend to use to find support for our hypotheses. The intended contribution of our paper is to propose and validate partial internalization as an alternative vertical governance structure that can help MNCs more effectively respond to the social and environmental challenges that occur along the most fragile links in their value chain.

INTRODUCTION

In recent years, society has started to hold lead firms morally and financially responsible for the social and environmental problems prevalent throughout their GVCs (Narula, 2019), even though these issues do not necessarily arise within the hierarchical or contractual boundaries of these large multinationals. Consider, for example, the Associated Press (2016) investigations into the Thai seafood GVC, where they discovered that fish caught by legitimate, registered fishing vessels was processed and frozen alongside fish caught by illegal trawlers crewed by enslaved fishing workers. However, although Thai Union – one of the world's largest seafood exporters – ostensibly had no way to know that their primary suppliers were sourcing from sub-suppliers who were in turn sourcing seafood from illegal fishing operations, Thai Union was nevertheless implicated in the scandal and found guilty in the court of public opinion. This case study raises the motivating problem at the heart of this study: which governance structures should lead firms and MNCs, such as Thai Union, use to control the social and environmental practices of their GVC suppliers, particularly those located in institutionally fragile emerging economies?

To answer this question, we first develop a formal model to determine the conditions under which two types of vertical governance structures – internalization and contracting – are considered 'optimal' from both an economic and social point of view. Second, we outline an empirical approach to test two key predictions of our model. One of our key insights is that, while cascading contracts can be effective at identifying and responding to observable issues (such as manufacturing defects), they are much less effective at responding to latent, unobservable issues that arise in the production process (such as the use of slave labor to source first-mile inputs). When lead firms seek to alleviate these latent social risks, we argue that partial internalization will become the most economizing governance structure. As such, we depart from conventional internalization theory and argue that the internalization of production stages within GVCs happens *not only* when lead MNCs aim to mitigate market imperfections in transactions which they directly contract, *but can also occur* even when they are *not* directly involved in host country operations, nor engaged in any contractual agreement with GVC participants. While MNCs may be organizationally distant from their GVC first mile activities, they might need to internalize them. Thus, our approach expands the classic predictions of internalization and transaction costs economics with respect to cascading contracts.

THEORETICAL DEVELOPMENT

This section has three parts. First, we review the current literature on vertical forms of GVC governance – namely, internalization and contracting. Second, we introduce a preliminary social impact model, analyzing the social impact of a GVC in the cases of a) *complete* and b) *incomplete* contracts to demonstrate how deviations from social responsibilities occur under a contracting regime and how these

deviations incentivize MNCs to internalize first mile activities. Third, we analyze the 'optimal' governance structure to determine the conditions under which lead firms should use cascading contracts, and when they should instead choose to internalize upstream activities, to manage the social impact of their GVC. We conclude by discussing two core hypotheses that emerge from our analysis, and we will propose an empirical strategy to test our hypotheses in the subsequent section.

Internalization and Cascading Contracts

According to classical internalization and transaction costs theories (Buckley & Casson, 1976, Dunning, 1977, Hennart, 1982, Rugman, 1981), firm boundaries are determined as a tradeoff between the hierarchical costs of within-firm activities versus the transaction costs of contracting with third parties. The costs of running sequential production stages along a value chain increase the more organizationally distant an activity is from the focal firm due to loss of control and enhanced coordination complexity arising from divergence of information and incentives (Mookherjee, 2006). Specifically, it has been recently shown that control and communication costs restrict the performance of centralized organizationally distant activities (Belenzon, Hashai, & Patacconi, 2019). Consequently, firms limit the number of vertical production stages they integrate within their organizational boundaries and opt to contract more organizationally distant production stages (Verbeke & Kano, 2016). Gereffi, Humphrey, and Sturgeon (2005) argue that when transactions cannot be completed within arm's length markets, GVCs will emerge. Moreover, Gereffi et al. (2005) suggest that fully integrated firms emerge only when transactions are difficult to codify and supplier capabilities are low. As such, firms integrate a limited number of vertical production stages relatively close to their core operations and outsource more distant production stages, cascading their various quality requirements to lower-level suppliers (Narula, 2019). Such delegation reduces the burden of communication and information processing for the focal firm, as it compels them to deal only with the immediately proximate suppliers.

In contrast to internalization, the MNC would draw up a contract only with its most immediate suppliers in a cascading contracting regime. These suppliers, in turn, would contract with their sub-suppliers until the end of the GVC is reached with a contract between the final two firms. In principle, an MNC could attempt to orchestrate the entire GVC, drawing up a 'grand contract' with all supplier firms, specifying the products and services each firm must provide and the price they receive. While this is a more robust solution that offers more control for the MNC, it is also significantly and prohibitively more challenging to implement (Belenzon et al., 2019; Zhou & Guillen, 2016). As top managers in the MNC have limited cognitive bandwidth and operate under significant uncertainty (Casson & Wadeson, 2000; Simon, 1957), it would be unmanageable to deal with all the firms and locations in the GVC. The MNC may not know where to find the best suppliers further upstream, as it lacks the technical knowledge about those stages of production, and it may not be able to monitor a large number of arm's length suppliers simultaneously. These challenges are compounded by the geographic, institutional, and cultural distance between the MNC and their many suppliers in the chain (Aßländer, Roloff, & Nayir, 2016). However, the MNC can resolve these challenges by outsourcing the monitoring of further upstream suppliers to the firms that directly transact with those suppliers, thereby leveraging the technological knowledge and organizational and geographic proximity between distant, upstream suppliers. Hence, if a UK MNC transacts with a South African component supplier who, in turn, sources from a supplier in the DRC, it may be more efficient to leave the monitoring of the Congolese supplier to the South African supplier's managers who have a better understanding of what the Congolese firm is doing due to proximity, both culturally and geographically.

An essential requirement for this approach to work, however, is that each firm in the GVC can mitigate moral hazard problems in the relationships with their immediate suppliers, as otherwise, transaction costs will accumulate throughout the GVC and thereby eventually also impact the MNC. In other words, cascading contracts work well when quality is sufficiently observable in the following link of the chain. For example, faulty components or sub-standard materials may be detected in the quality control of the immediate procuring firm, such that these problems are solved long before they escalate to the level of the MNC. However, it is precisely this dimension—observability—that makes social and environmental challenges unique. As argued by Asmussen and Fosfuri (2019), social and environmental challenges differ fundamentally from quality because social and environmental impacts are a 'credence good' as opposed to

an 'experience good': unlike observable characteristics like product quality, social and environmental impacts may be undiscovered, and perhaps undiscoverable, by the most proximate procuring firm even in the long term. Once the product (which could be a material or a component) leaves the supplier's factory, it is *impossible* to detect its production's social and environmental impact by inspecting the product itself because this impact is, by definition, external to the product. Hence, the production process may impose external costs which are not captured in price or quality and are not ex-post detectable by the procuring firm. Instead, the detection of negative social and environmental impacts often takes place in a highly geographically and temporally removed fashion, for example, when media in the MNC's end markets run stories about the problems several months or years later. As such, the pressures to ensure social and environmental responsibilities are much more acute on the geographically, culturally, and organizationally removed MNCs than on the firms that generate the social and environmental impact in the first mile. We now unpack this argument, model it, and extract the implications for the propensity to internalize GVC activities that are organizationally distant from the lead firm.

Modeling Social Impact Along the GVC

Suppose that a GVC consists of N stages. All stages are jointly necessary to deliver the final product, for which consumers are willing to pay V. The activity in each stage i has some social and environmental (hereafter: social[1]) impact (which can be positive or negative), with the total social impact of the GVC being . In each stage, costs of are incurred so that the total cost in the GVC is . The functions S and C are linked by trade-offs between economic and social objectives, so that the costs in each location, (), are an increasing and convex function of the social impact, which is chosen by the firm controlling that activity, as illustrated by Figure 1.

insert Figure 1 about here

From society's perspective, there is a worst and best way to perform the activity in each location. The worst way is the one that minimizes (and therefore) subject to the constraint that it is legal, and it is denoted . This approach yields the lowest social value while still being legally acceptable in the location where it takes place. In some locations, for example, that might include sweatshops, pollution, unsustainable harvesting, or worse. The cost of this 'barely-legal' approach is denoted . While the activity could be performed at an even lower cost (if , for example by outright slavery, we are limiting our analysis to strictly legal approaches. Improving conditions above this threshold is possible, but comes at an increasing marginal cost (i.e., and). As S increases above , the negative social impact of the activity is reduced and eventually eliminated. For example, once sufficient work safety standards have been implemented and pollution is controlled, the activity no longer has a negative social impact. However, the potential for creating social value can go beyond negative impact and make a positive contribution to local communities – e.g., firms can provide local workers with educational opportunities or other benefits.

Of course, all social benefits come at a cost and thereby consume resources that could have been used in other ways, reflected in the model's increasing marginal cost function. We define the *socially optimal* way to perform the activity as the one that maximizes the 'net social benefit' provided by the firm, . This would be the approach chosen by an omniscient social planner, who includes in its utility function the social impact of each activity as well as its costs. Hence, in each location we equalize marginal (social) benefits and marginal (economic) costs, resulting in the 'optimal' level of social impact which is given by . With this initial setup, we start with the hypothetical ideal of complete contracting and later analyze the implications of contractual incompleteness for social and environmental outcomes and MNC internalization decisions.

Complete Contracts. When contracts are complete, the MNC itself will be able to draw up a contract with every member of the GVC to provide a certain level of S, corresponding to the 'orchestrator' approach described above. Each firm in the GVC has an opportunity cost of , and hence will have to receive a price from the MNC that covers both real and opportunity costs, for a total of . Summing these terms over all locations result in , with and . If consumers, managers, and owners do *not* care about social outcomes, the

[1] In the rest of this paper, we use the term "social impact" to broadly refer to any impact on "the common good", encapsulating both social and environmental issues.

solution that provides the most value to the GVC will be the cost-minimizing one of setting in each location. This solution requires no additional control instruments, for each firm in the GVC will maximize its own economic performance by choosing the cost-minimizing level of S_i. Now suppose that consumers are willing to pay *V* for the product and that there is super-additivity such that , where . In this scenario, the MNC can reach an agreement with all firms in the value chain such that all parties are better off and the residual surplus () is divided according to each firm's relative bargaining position (Acemoglu, Antras, & Helpman, 2005, Acemoglu, Antràs, & Helpman, 2007). If there are many firms that could potentially perform a given stage of the GVC (e.g., low skilled manufacturing), the firm performing that activity can only appropriate a relatively small share of the total surplus in the GVC. Conversely, if the firm is essential to value creation in the GVC (e.g., because it owns the patents/brands), it would be able to appropriate a relatively large share. However, the value appropriated by the different parties has no bearing on the *social* outcome, which is always going to be *S* if no one attaches utility to it.

What does it take for the *optimal social outcome* to be achieved? Suppose that, in addition to the economic payoffs, the MNC values the social outcome by , each local firm by , and consumers and other stakeholders by , parameters determined by the psychological utility that managers, owners, and consumers derive from making the world a better place (or avoiding making it worse). The relative importance of these preferences depends on the ability of the MNC to control behavior in the GVC. When each firm in the GVC can be controlled as to their level of *S*, as we assume in this benchmark case, it is a sufficient condition for obtaining the optimal social outcome that (see proof in the Appendix). In other words, only in the special case where the MNC, the firms in the GVC, and consumers *jointly value the full social outcome*, where perfect control can be imposed in the GVC, that the market works as a perfect vehicle to ensure the optimal social outcome. This also means that it is sufficient that one of the three actors fully value the social good: if , the MNC will maximize its own payoff by enforcing socially responsible practices throughout the GVC; if , consumer pressure on the MNC motivates it to provide such enforcement; and, if , each firm in the GVC will on its own account choose the socially optimal solution.

Incomplete Contracts. The above scenario is limited to a world of perfect information and complete contracting, where it does not matter if the activity under consideration occurs in the final stage of the GVC before the final product is sold to consumers, or in the first mile where raw materials are collected (Baldwin & Venables, 2013). Realistically, however, information, enforcement, and accountability issues are likely to arise towards the tail of the GVC because of the distance between the lead firm and its sub-suppliers. We now explore the implications of that observation and formally build these elements into our model. This will demonstrate how deviations from social responsibilities occur, providing a platform to discuss the incentives such deviations pose on MNCs to internalize first mile activities in order to correct them.

To arrive at a closed form solution, we conceptualize the GVC as a continuous space *y* normalized to a length of 1, such that where 0 is the head of the GVC (where the MNC is positioned) and 1 is the tail, i.e., the first mile. We assume each location and activity to be miniscule relative to the chain as a whole, allowing us to treat the space as a continuum and thereby solve the model analytically. Thus, the total social impact is given by . The preference that each firm in the GVC has for the social impact of their activities is given by , reflecting differences in stakeholder pressures in emerging and developed countries. At the stage controlled by the MNC, a residual value is ascribed to social impact by the MNC stakeholders, and this residual[2] is given by . Suppose that each section of the GVC can be either *autonomous* or *controlled*. In the autonomous case, local firms will maximize their own performance by setting , where sets . In the controlled case, the MNC can optimize social outcomes according to its own preferences. Since it inherits the stakeholder pressures of the local firms that it controls, this entails choosing where is the social outcome that sets . We denote the difference in the net social impact of these two outcomes by K, where . *K* is a function of *y* because the impact of social outcomes might be higher in some locations and activities than in others. Hence, is the (socially driven) marginal benefit to the MNC of controlling a given part *y* of the GVC.

Optimal Governance Structure

[2] We assume this residual to be small enough such that $\alpha_M + \alpha_C + \alpha_F(y) < 1$ for all y.

How can the MNC control the various stages in the GVC? It could do so either by directly contracting with each firm in a given stage and monitoring their adherence to social standards, or by internalizing the stage. Suppose that internalization comes at a hierarchical cost of , where captures the notion that internalization is more costly towards the tail end because of geographic, cultural, and institutional distances. Furthermore, there is a cost of complexity of , where *z* is the size of the geographic space internalized by the MNC. Because complexity increases exponentially with scope and the cognitive capacity of managers is limited (Casson & Wadeson, 2000, Simon, 1957), we assume that and . The *optimal* organizational boundaries of the MNC therefore depend on the way in which the parameters described above vary across the GVC space. Suppose first that , so that the marginal benefit of internalization is constant across the whole GVC. Because , the MNC will want to internalize those activities closest to its own core operations. Setting marginal benefit equal to marginal costs, the MNC continues to internalize until , as illustrated in Figure 2.

insert Figure 2 about here

The top panel shows the space constituted by the GVC, ranging from 0 (closest to the MNC) to 1. Ignoring costs of complexity, internalizing an additional activity in an additional location provides benefits , shown with the flat line, but comes at a hierarchical cost of , sloped to reflect that the costs of internalization increase with the distance from the MNC. The difference between these two lines is reflected in the bottom panel by the marginal benefit of increasing MNC scope (*z*). By implication of the functional forms of *H* and *K*, the activities are ordered from the most attractive to internalize (closest to the MNC headquarters) to the least (most distant), and so the axes of the two panels are aligned such that a given scope *z* corresponds to internalizing up until the activity . If complexity were not an issue, the MNC would continue to internalize activities until the two lines in the top panel cross or, equivalently, the MB line in the bottom panel drops to 0. However, because the marginal costs of complexity increase with scope, it is optimal to stop short of this point and instead internalize until . Thus, the MNC reaps social benefits corresponding to the highlighted area between the curves in the top panel.

The outcome in Figure 2 describes the 'conventional wisdom' as to how MNCs organize their GVCs: internalize adjacent activities until reaching a part of the GVC that is sufficiently distant from their core activities. However, the assumption of a flat *K* function, which drives this result, is open for questioning. There are several reasons to suspect that social impact may in fact be *higher* towards the tail of the GVC. Activities in the first mile of the GVC often occur in emerging markets with institutional voids, low incomes, and weak rule of law, all of which constrain social and environmental protections. Furthermore, the activities themselves (e.g., mining/agriculture) are physically demanding and often dangerous; as such, this part of the GVC can often pose an extreme risk to the both the workers and environment in which they operate. Finally, these activities are often low skilled, where workers operate without substantial capital and intangible assets, and are more vulnerable compared to knowledge-intensive workers in developed markets. In short, to juxtapose these ideas with an example, *the potential for social impact is higher* when organizing mining workers in Congo than when organizing marketing professionals in Germany. To capture this idea, we now assume that social impact is increasing and convex such that and , as illustrated in Figure 3. Now, the curves in the top panel intersect twice, implying that there are two sections of the GVC where the MNC would like to internalize—towards the head and towards the tail, while leaving the middle part outsourced and governed by cascading contracts.

insert Figure 3 about here

As Figure 3 shows, if complexity were not an issue, the MNC would internalize everything left of the first intersection and everything right of the second intersection. However, as these two sections tax the cognitive capacity of MNC managers, we need to aggregate and rank them from the most to least attractive, and *then* equate marginal costs and benefits. This is done in the bottom panel of Figure 3, where MB_H is the marginal benefit of internalizing an additional activity in the head and MB_T is the marginal benefit of internalizing in the tail. These curves are aggregated horizontally to provide the total MB curve (in bold). The MNC starts by internalizing the part of the GVC with the highest marginal benefit (i.e., its 'core' activities), moving down along the steep section of the total marginal benefit curve until marginal benefits are equalized in the two sections ($MB_H = MB_T$). From that point on, it will internalize simultaneously in the

head and the tail of the GVC, and *z* becomes the sum of the internalized activities in the two separate sections, hence the horizontal aggregation leading to a less steep section. There are two scenarios for the marginal cost curve depicted in Figure 3. If the MNC's ability to handle complexity is low, perhaps because it is a small or inexperienced firm, then it has a high marginal cost of complexity captured by the MC_H curve, and so the firm will never reach the part of the marginal benefit curve where internalization in the first mile occurs. The result is equivalent to the original analysis where it sets $MB_H = MC_H$. However, if the lead firm has strong abilities to handle complexity and low marginal costs (denoted MC_L), it can continue past the kink in the marginal benefit curve and internalize in both sections, until $MB_H = MB_T = MC_L$.

This analysis can be used to identify the conditions under which the MNC should internalize in the first mile of their GVCs. First, it is necessary that the curve 'catches up' with the curve towards the tail of the GVC, which in turn requires that . Also, either the MNC must have a strong capacity to handle complexity (as shown in the figure with MCL), or the curve must be convex enough so that first mile internalization takes priority (hence $MB_T > MB_H$, as opposed to Figure 3). This brings us to the core prediction of our model: that lead firms will internalize the head of the GVC when the net (social) benefit from internalization exceeds the cost of internalization. Under what conditions would the net social benefit from internalization exceed the cost of internalization? As discussed above, we would expect to see this in institutionally fragile contexts where human rights violations are flagrant, extreme, and common. Therefore, according to our model, we would expect the propensity of lead firms to internalize first-mile activities to be *lower* ceteris paribus, but *higher* in the extreme case (firms exposed to a high degree of social risk that are also operating in high-risk countries):

Hypothesis 1a (baseline): Ceteris paribus, firms are *less* likely to internalize upstream activities located in high-risk countries.

Hypothesis 1b (baseline): Ceteris paribus, firms facing a high degree of social risk exposure are *less* likely to internalize upstream activities.

Hypothesis 2: Firms facing a high degree of social risk exposure are *more* likely to internalize upstream activities located in high-risk countries.

Insert Figure 4 about here

EMPIRICAL STRATEGY

Empirically, we begin by creating the first of our three primary constructs, *upstreamness* (following a procedure established by Alfaro, Antràs, Chor, and Conconi (2019), Acemoglu, Johnson, & Mitton (2009), and Antràs and Chor (2013)). The other two main constructs, *social risk exposure* and *country risk*, will be discussed afterwards. For *upstreamness*, we begin by taking these initial four steps: 1) Identify the relevant inputs *i* in each industry *j*; 2) Determine how 'upstream' each input *i* is for each industry *j*; 3) Determine the set of inputs *i* internalized by firms operating in industry *j*; and, 4) Determine the set of inputs *i not* internalized by firms in industry *j*. As an aside, this approach is reminiscent of the initial task first set forth by Coase (1937): to determine the boundaries of each firm based on the activities they have integrated, and the activities they have *not* integrated. In this study, we seek to determine not only the set of integrated activities, but also the extent of *discontinuity* within the set of integrated activities. Firms which internalize more upstream activities relative to downstream activities will be assigned a higher 'upstreamness' score, while firms which internalize more proximate activities while outsourcing distant activities will be assigned a lower 'upstreamness' score.

To complete Steps 1 and 2, we will follow the procedure outlined in Chapter 20 of the UN *Handbook on Supply and Use Tables* (2018), using US Input-Output Tables. This procedure enables us to determine the set *S* of all SIC codes involved in the production of a final product *j*, as well as how 'upstream' each input is from the final product. As this procedure is relatively straightforward, our description will be kept to a high level for brevity's sake. For Step 1, we will use the I/O tables to construct a Leontief matrix,

where the values on the diagonal indicate the net output for each industry, while the remaining values indicate the total input requirements (i.e., the TR coefficient) needed from the remaining industries to produce one unit of final output. The inverse of this Leontief matrix will produce the *direct* and *indirect* requirements (DR and IR, coefficients, respectively) of each input needed by each industry. For Step 2, we will then define a measure for 'upstreamness' of each input by taking the ratio of IR:TR, weighted proportionally by the number of stages each indirect input takes before reaching the final stage of production. In other words, inputs that require a greater number of stages before reaching the final stage take on a higher value (i.e., are more *upstream*) than inputs that require a fewer number of stages.

For Steps 3 and 4, we will follow the procedure used by Alfaro et al. (2019), using data from Bureau van Dijk's ORBIS database. ORBIS provides detailed information for both firms and any subsidiaries, including name, unique identifier, location, global parent, primary and secondary SIC codes, and performance/financial data (such as employee count, assets/liabilities, and income/expenses). By limiting our search to firms with a minimum total employment of 20 and a primary SIC activity in manufacturing (i.e., SIC categories 2000 - 3999), we draw a final sample of ~73,000 firms and ~316,000 subsidiaries across 120 countries. In Step 3, we will establish ownership linkages between each parent firm *p* and subsidiaries, and we will use the combined SIC codes of the parent and subsidiaries to determine the set of activities internalized by each firm operating in industry *j*, denoted as I(*p*). Finally, in Step 4, because we were able to determine S(*j*) from the I-O tables in Steps 1 and 2, as well as the set of inputs *i* integrated by each firm from Step 3, we are able to determine the residual activities which are *not* internalized (i.e., the activities that are instead contracted out), denoted as C(*p*) = S(*j*)/I(*p*). According to Alfaro et al. (2019), this procedure allows us to 'map out' anywhere between 88 and 98% of a GVC.

Following this initial setup, we construct a measure of social risk exposure (*)* following Ioannou and Serafeim (2012). We draw a random sample of 10,000 firms in the manufacturing industry (SIC codes 2000 – 3999) from ASSET4/Refinitiv. Next, we create an index of each firm's social and environmental scores over the past five years, and then collapse this index by SIC code to create an industry-level measure of social risk exposure. Here, industries with lower composite scores have higher social risk exposure due to the relatively high propensity of ESG malfeasance and other controversies relative to industries with higher composite scores as captured in the ASSET4 data. Finally, country risk (*)* is relatively straightforward to compute following Goerzen et al. (2021), who use World Bank Governance Indicators as a proxy for country-level risk.

By combining these measures of social/country risk with the ORBIS dataset used to calculate upstreamness, we will be able to test whether country and GVC risk moderate the propensity of firms to internalize upstream/first-mile activities through two logistic regression models. Our primary DV will be calculated as a ratio measure – specifically, the ratio between the 'upstreamness' of a lead firm's integrated inputs to the 'upstreamness' of its non-integrated inputs. This ratio increases as the parent firm internalizes its upstream inputs, and decreases when the parent firm outsources its upstream inputs. Our explanatory variables are social risk exposure and country risk. We will test our hypotheses using the following logistic model:

$$P(INT_{ijp}) = \beta_0 + \beta_1 upst_{ij} + \beta_2 \mathbf{1}(\rho_j > \rho_{med}) + \beta_3 \mathbf{1}(\rho_c > \rho_{med}) + \beta_4 \mathbf{1}(\rho_j \times \rho_c) + D_p + \epsilon_{ijp}$$

Here, the left-hand side corresponds to a binary firm-level indicator that takes on a value of 1 if parent firm *p* in industry *j* has internalized activity *i*, and 0 otherwise. On the right-hand side, captures the relationship between upstreamness and likelihood of internalization; and capture the relationship between social/country risk and likelihood of internalization, and captures the interaction effect between social risk exposure and country risk. Note the use of binary indicators for through , where a value of is assigned if the social/country risk is above the median level. Additionally, vector corresponds to a set of firm-level control variables, including firm age, firm size, number of subsidiaries, and a 0/1 MNC indicator. We also intend to control for country fixed effects () and cluster standard errors by industry *j*. Note that we intend to run other robustness checks, including alternate estimation procedures, alternate DV/IV specifications, etc., but due to space constraints, we are unable to provide a full description here. According to our

theoretical model, we expect the coefficients on and to be negative, and to be positive. These results would indicate that firms in riskier industries have a *higher* propensity to integrate upstream activities when those activities are located in risky countries.

CONTRIBUTIONS

A key tenet of internalization theory as originally formulated by Buckley and Casson (1976) and their successors (Dunning, 1977; Hennart, 1982; Rugman, 1981) is that internalization allows MNCs to resolve market imperfections. Due to the limited cognitive capacity of MNC managers, however, internalization becomes exponentially more complex as it is implemented in increasingly organizationally and geographically distant activities along GVCs (Belenzon et al., 2019; Zhou & Guillen, 2016). Such complexity leads MNCs to internalize organizationally proximate production stages (Verbeke & Kano, 2016) and continue to internalize more 'organizationally distant' activities (Belenzon et al., 2019) only as long as the marginal benefits exceed the rapidly increasing marginal costs (Coase, 1937).

We have developed a contrary but complementary argument, suggesting that MNCs may also, or instead, internalize the ‘first mile’ of their GVCs to improve their compliance with sustainable development goals, workplace transformation, and social justice in fragile environments (Coslovsky & Locke, 2013, Locke, Amengual, & Mangla, 2009). Our central premise is that even if the internalization of such activities seemingly does not follow from an internalization/TCE perspective due to organizational distance, it may well become a viable, even required, strategy once the implications of poor social and environmental performance along the GVC are taken into account by MNCs. We have developed and presented our argument via a formal model, and we have also outlined the empirical approach we intend to take in order to find some preliminary support. While we have focused on vertical governance, it is just as important to understand the strengths and weaknesses of horizontal governance (i.e., partnering with local regulators, labor unions, and NGOs), as well as the conditions under which those horizontal governance structures will best perform. Ultimately, we hope that future researchers will build upon the model presented here and develop new insights about the most effective governance structures MNCs can adopt to improve social and environmental conditions along their GVC.

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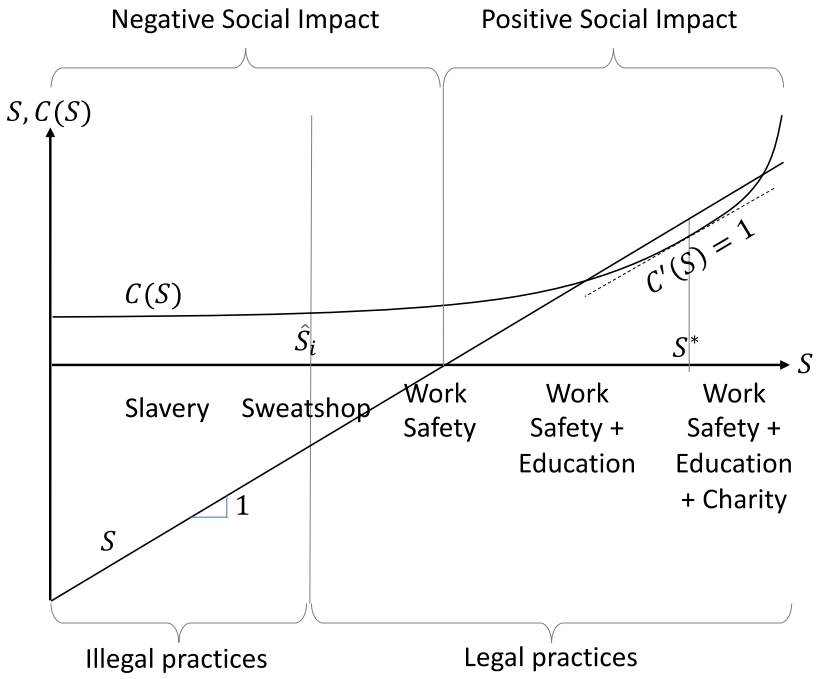
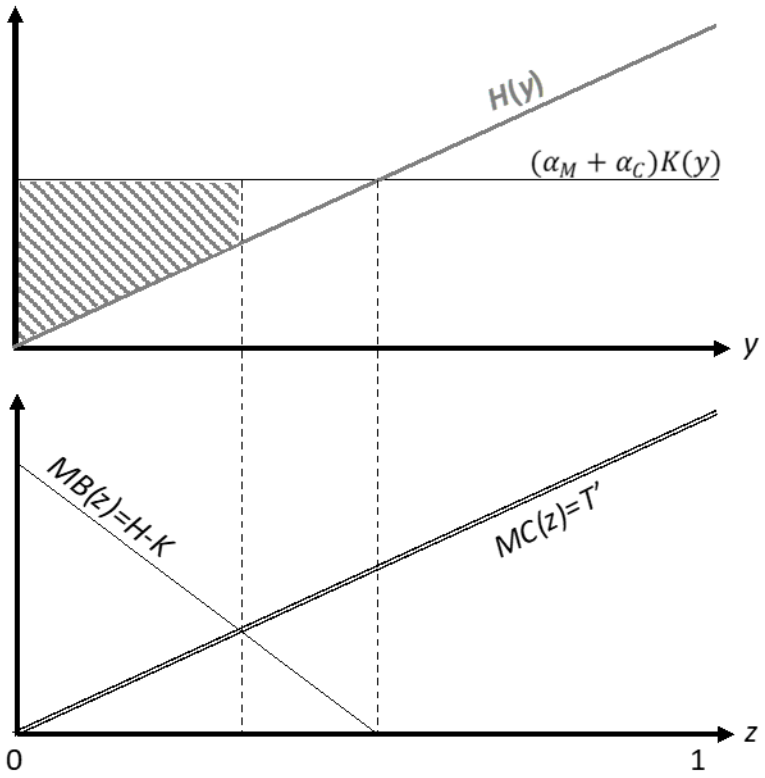
FIGURE 1



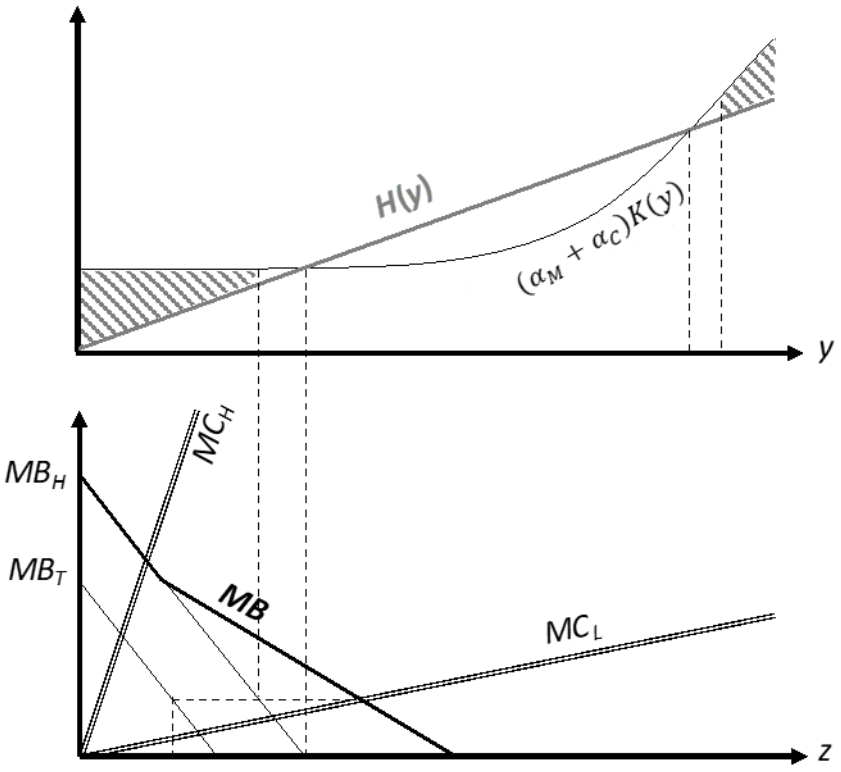
The social impact and corresponding costs of GVC activities.

FIGURE 2



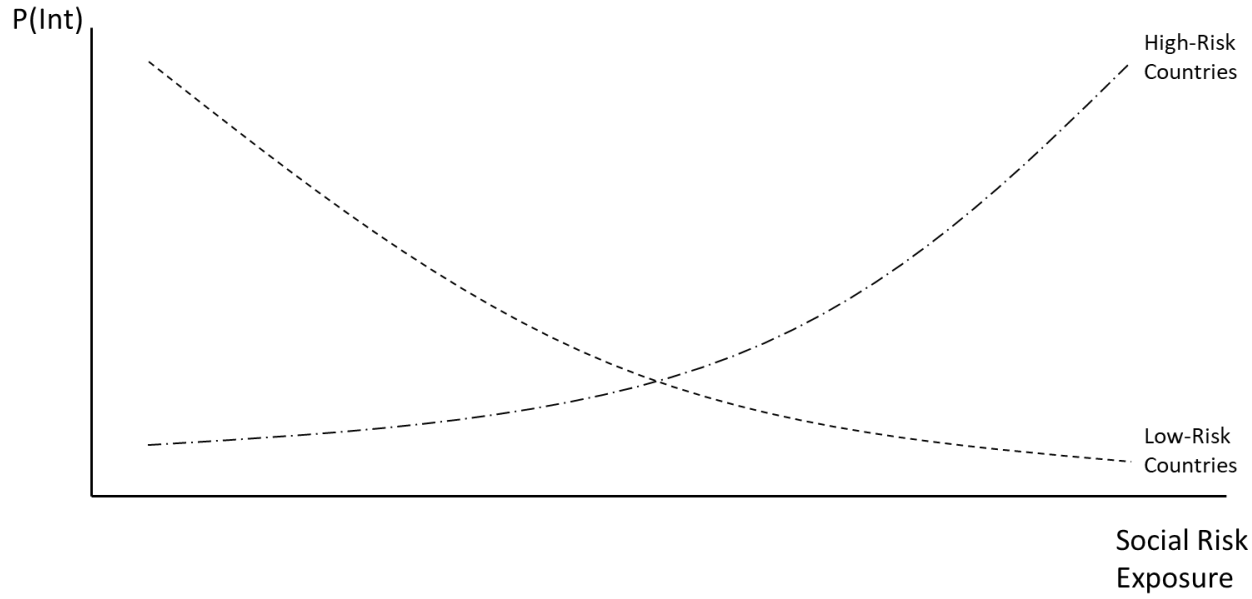
The social benefits and costs of internalizing the GVC, according to conventional wisdom.

FIGURE 3



Internalizing the head and tail of the GVC.

FIGURE 4



The hypotheses represented in graphical form.

APPENDIX

We here provide the proof that is a sufficient condition to achieve the optimal social outcome. First, realize that the MNC knows it can charge from consumers, it values the social good by in addition to its own economic profits, and it has to pay a price of *P* to the GVC, with each supplier receiving . The price is determined by bargaining and must fulfil the participation constraint of all firms in the GVC as well as that of the MNC. Each supplier gets a payoff of , and this matches its opportunity cost if . Summing over all firms, this means that . The MNC gets a payoff of and will accept any price below that, leading to a bargaining core of . The surplus to be bargained over is equal to the 'width' of the core and given by . If denotes the MNC's bargaining strength, i.e. the share of the surplus that the MNC can appropriate, its payoff becomes) and it chooses S so as to maximize this expression. Since , V, and X do not depend on S, this corresponds to maximizing , which reduces to for . This is exactly the same as how we defined the maximization program of the social planner earlier. QED.