

# Searching for Fish in Trees (緣木求魚)? Economic Development when Context Matters\*

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## Abstract

In this chapter, we develop a framework for analyzing the determinants of economic development and their implications for policy. We distinguish between classical determinants—such as inputs into education and health, access to credit and geography—and non-classical determinants—including cultural values, social norms, beliefs, identity, and social organization. We classify these determinants along two policy-relevant dimensions: whether they can be clearly ranked in terms of their contribution to development (vertical versus horizontal) and whether they can be directly altered through policy intervention (manipulable versus non-manipulable). We show that even for classical determinants, policy impacts are often hard to predict and are mediated by local social and cultural context. These issues are more pronounced for non-classical determinants, which are more complicated to change through policy intervention and more difficult to rank in welfare terms. In some cases, traits commonly viewed as obstacles to development may be well-adapted to local conditions or even supportive of economic performance, a possibility we refer to as “reverse vertical.” Building on Hirschman’s (1967) distinction between trait-making and trait-taking policymaking, we argue that interventions that attempt to directly transform non-classical determinants often rest on fragile assumptions about ranking and manipulability and risk generating unintended or adverse effects. By contrast, many of the most successful development episodes of the past several decades relied on policies that took existing social and cultural traits as given and designed institutions, technologies, and incentives that worked within those contexts rather than attempting to overturn them.

**Keywords:** Development Economics, Policy Interventions.

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# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Basic Framework and the Classical Determinants of Development</b>	<b>5</b>
2.1	Vertical, Manipulable . . . . .	5
2.2	Horizontal, Non-Manipulable . . . . .	7
2.3	Vertical, Non-Manipulable . . . . .	8
2.4	Horizontal, Manipulable . . . . .	8
<b>3</b>	<b>Challenges of Manipulation in a Classical World</b>	<b>9</b>
<b>4</b>	<b>Non-Classical Determinants of Development</b>	<b>14</b>
4.1	Partly Manipulable . . . . .	16
4.2	Allowing for the Possibility of the Reverse Vertical . . . . .	18
4.3	Policy Interventions and Disrupting Local Equilibria . . . . .	19
4.4	Recent Trends in Development Economics . . . . .	22
4.4.1	Long-Run Trends in Research Style . . . . .	23
4.4.2	Randomized Control Trials in the Modern Era . . . . .	24
<b>5</b>	<b>The Trait-taking Approach</b>	<b>25</b>
5.1	Trait-taking According to Hirschman . . . . .	26
5.2	Trait-taking and Development Economics . . . . .	28
<b>6</b>	<b>Potential Sources of the Reverse Vertical</b>	<b>31</b>
6.1	Different Outcomes are Relevant . . . . .	31
6.2	The Local Context Matters . . . . .	34
6.3	The Time Period Matters . . . . .	39
<b>7</b>	<b>Trait-Taking and Development Successes</b>	<b>41</b>
7.1	Trait-taking in Historical Perspective . . . . .	41
7.2	Agricultural Productivity Growth and The Green Revolution . . . . .	42
7.3	The Rise of East Asia . . . . .	45
7.3.1	South Korea . . . . .	45
7.3.2	The Andon Cord in Japan . . . . .	46
7.3.3	Stepping Stones in China . . . . .	47
7.4	Growth Successes in Africa . . . . .	48

7.4.1	Botswana	48
7.4.2	Rwanda	50
<b>8</b>	<b>Conclusion</b>	<b>51</b>
<b>A</b>	<b>Appendix: Article and Trial Classification</b>	<b>72</b>
A.1	Sample and Text Pre-Processing	75
A.1.1	Randomized Control Trials	75
A.1.2	Quarterly Journal of Economics	75

# 1 Introduction

Mengzi said, “To seek what You desire by the means that You employ is like climbing a tree in search of a fish.” The king said, “Could it really be as extreme as that?” Mengzi said, “It is worse than that! If one climbs a tree in search of fish, although one will not get a fish, there will be no disaster afterwards. If You fully apply yourself to seeking what You desire by the means that You employ it can only lead to disaster.” ([Mengzi, 2008](#), p. 13, originally published in *Mencius*, 4th century BCE).

Over the past decades, there has been an explosion of research in economics about the social and cultural characteristics of society. This has been especially pronounced in the field of development economics, where researchers have documented that “classical” factors—inputs into education and health, access to credit, security of property rights and geography—are not the only determinants of prosperity. Increasingly, “non-classical” factors, like behavioral traits, cultural values, religious beliefs, morals, social norms, and identity, are considered essential parts of our understanding of growth and development.

In light of this transition, the goal of this chapter is to take a step back and provide a preliminary conceptual overview about how economists approach both classical and non-classical topics, especially in the context of the design, selection, and evaluation of development policy interventions. Should our growing understanding of non-classical determinants shape policy interventions that target classical ones? What are the key differences between classical and non-classical determinants from the perspective of development economics and development policy? And what kinds of questions and empirical approaches become more (or less) effective when studying non-classical topics? While studying non-classical topics poses new challenges, our argument throughout the chapter is that embracing the challenges of this growing area of study provides many new and exciting opportunities for both research and effective policy design.

We begin by developing a taxonomy of the determinants of economic development that could potentially be the targets of policy interventions (Section 2). We introduce this framework in the context of classical determinants of development before describing which aspects of the framework do and do not apply to non-classical factors. We categorize each determinant along two dimensions: (i) whether or not it is directly “manipulable” through policy, and (ii) whether there is a clear, “vertical” ranking (i.e., more of a particular determinant is better). Both shape the potential attractiveness and impact of policy intervention. First, only manipulable determinants can be directly affected through policy intervention in the country in question. An example of a non-manipulable determinant is

geography. If a country is poor in part because it suffers from tropical diseases without effective treatment or ecological conditions that have not been the focus of agricultural technology development (Alsan, 2015; Kremer and Glennerster, 2004; Moscona and Sastry, 2025), then the set of effective policy interventions in that country is limited. Second, even if a determinant is directly manipulable through policy, it only makes sense to attempt to change it if we know which varieties of that determinant are better for development.

This taxonomy makes clear that policy interventions in developing countries are most appropriate in cases where the targeted determinant of development is both manipulable and vertical. However, even within the realm of classical determinants, things are not always so simple. First, as the example above of technology mismatch illustrates, a large share of global differences in productivity and well-being is governed by factors that cannot be influenced through policy in developing countries themselves (see Nunn, 2019).

Second, there is a large body of work documenting that the impacts of policy interventions designed to target classical determinants—from technology adoption to school construction programs—are mediated by non-classical differences across societies (Section 3). Studies ranging from qualitative accounts of 20th century policy interventions (e.g., Ferguson, 1994; Foster, 1962; Lansing, 2009) to more recent applied research (e.g., Ashraf et al., 2020; Godoy et al., 2021; Moscona and Seck, 2024; Thomas et al., 2025) have documented that local features of social organization and culture shape the impact of policy interventions, in some cases leading to unintended and even harmful consequences. This body of work suggests that many classical determinants are not as manipulable as policymakers often assume and highlights the importance of non-classical differences across societies even when studying more standard topics and policy interventions.

We next turn to non-classical determinants directly and describe how they challenge our baseline two-by-two framework (Section 4). While even policy interventions targeting classical determinants can have unforeseen consequences, designing policies to alter local social norms, values, identities, or customs is even more difficult. This could be because non-classical factors are often slow-moving and connected with aspects of well-being in ways that can be hard to predict *ex ante*; perhaps as a result, there is growing evidence that policies targeting these features of behavior are prone to backlash (e.g., Cullen et al., 2025; Fouka, 2020; Wheaton, 2022), alongside other complex and unintended reactions. Thus, we argue that many non-classical determinants are, at best, partly manipulable by policy.

We then raise the question of which non-classical traits should be considered vertical, implying that policy intervention to alter them would be justified. When classical determinants were the main focus of interventions and research, identifying vertical differences across societies was relatively straightforward. For example, we can all agree that access

to schooling or healthcare is better for development than a lack thereof. However, once the focus turns to non-classical determinants, things become less straightforward. Features of culture that seem unfamiliar (or even suboptimal) to policy makers could be well-adapted to the local context, or could help the society in question achieve desired outcomes that are different from the ones the policymaker has in mind. To make this point, we provide a number of examples of societies whose non-classical determinants were thought to be inconsistent with development—for example, Confucian culture in China and Korea (e.g., [Kim et al., 2019, 2020](#); [Weber, 1968](#))—but where ultimately the opposite seems to have been true. Thus, it may not simply be the case that determinants cannot be ranked, but that non-Western societies have characteristics that, given their particular context, work better than the cultural practices that are familiar to researchers and that existing policies promote. This is an example of a situation we call “reverse vertical”: when a characteristic that we typically assume is universally worse for development is actually better.

The possibility of reverse vertical characteristics becomes particularly important when one recognizes the nature of development interventions taking place today. As we show using text analysis of registered randomized control trials (RCTs) and publications in top journals, a majority of development economics research focuses on determinants that the authors themselves conceive of as vertical and manipulable. This has only increased in recent years, alongside a rise in the share of studies focusing on non-classical determinants where this vertical-and-manipulable paradigm is likely most restrictive. That is, development interventions focusing on non-classical features of society have adopted key features of interventions initially designed to target and alter classical determinants; however, we have only limited understanding of the policy levers that can effectively shift non-classical traits or the potentially complex consequences of doing so. Moreover, the possibility of reverse vertical characteristics might imply that governments, NGOs, and other institutions that design and promote interventions are using valuable resources to alter factors in ways that do not actually promote development and may in fact do the opposite.

Do these observations suggest that development economists should avoid non-classical determinants? We argue that the answer is “No, just the opposite!” and that these challenges can actually lead to new opportunities for policy design and implementation (Section 5). Our starting point is a useful distinction introduced by [Hirschman \(1967\)](#) between “trait-making” and “trait-taking.” Trait-making policies include those that directly alter some local characteristic of society. While the policies that [Hirschman \(1967\)](#) was evaluating fall into the classical realm, in the context of non-classical determinants this can include policies designed to shift local culture, family structure, norms, or beliefs. Trait-taking policies, on the other hand, are designed to accomplish the same development goal

in a way that is congruent with the traits that exist and does not require altering them.

The astute reader may note that there has been a switch in language from “determinants” to “traits.” Intentional or not, Hirschman’s choice to use the term “trait” is important. By labeling a feature of society a trait one avoids taking an *ex ante* position on the nature of the relationship between characteristics of society and economic development. It also recognizes that many societal traits can generate differences across societies without directly affecting economic development in a clear or consistent way. Yet, Hirschman argues, this does not mean they are irrelevant. They are still important for policy making and could have large development effects that vary in size or even direction across contexts, both of which warrant deeper study and understanding.<sup>1</sup>

While either trait-making and trait-taking might be appropriate in certain contexts, we argue that trait-taking could be an especially valuable framework for analysis of non-classical traits. First, it can open the door to effective policy when the underlying traits are not manipulable or only partly manipulable, since changing the trait is not relevant for the success of the policy. Consistent with this, we describe a range of exciting new research in development economics that highlights the potential effectiveness of a trait-taking approach to the design of policy interventions.

Second, and more importantly, if we accept that differences across societies could be reverse vertical, then trait-taking is the naturally more appealing strategy (Section 6). We describe a number of examples in which non-classical traits that are often presumed to be vertical actually are reverse vertical in certain contexts or according to the preferences of the society in question. Our discussion here clarifies that verticality is usually implicitly conceived of in development economics as something universal—applying in all contexts. We argue that thinking of this as a local property, conditional on circumstances, might be a much more flexible and accurate way to conceptualize the differences between societies.<sup>2</sup> The examples that we highlight—on topics ranging from fertility and family ties to the structure of property rights and politics—further highlight the challenges and potential pitfalls associated with trait-making alongside the possible returns to trait-taking.

In a final section, we turn to recent history and evaluate some of the most famous development successes through the lens of this distinction between trait-taking versus trait-making policymaking (Section 7). We focus on the dramatic rise in global food production since the mid-20th century, driven in large part by the Green Revolution; the growth miracles in East Asia, including South Korea, Japan, and China; and two of the

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<sup>1</sup>In the remainder of the chapter, with this difference in mind, we use both “traits” and “determinants.”

<sup>2</sup>We are therefore not advocating replacing one polar view—that Western non-classical traits are universally preferable—with its opposite, as [Vogel \(1979\)](#) did for Japan, or [Morris \(2011\)](#) proposed for China.

most noteworthy development successes in sub-Saharan Africa, Botswana and Rwanda. We argue that trait-taking policy was key in each case. Intentionally or not, the forms of economic, industrial, and political organization that were central to each success story were drawn from the local context, or by melding lessons from economics and political science with characteristics of local culture and society. While far from comprehensive, these examples cover a large share of the poverty alleviation that has taken place in recent decades and underscore the potential value of trait-taking policy moving forward.

In our minds, the questions that we raise do not have simple answers. We hope that this chapter will be one step toward a more complete understanding of the determinants of prosperity and the role of development economics in the process of achieving it. If we do not face these challenges squarely then, as Mengzi put it in his dialogue with King Xuan of Qi, we risk ending up in search of fish in trees.

## 2 Basic Framework and the Classical Determinants of Development

To fix ideas, we begin with the classical determinants of development differences. Figure 1 displays a two-by-two matrix that classifies classical determinants along two dimensions. The columns represent horizontal and vertical differences between determinants. A vertical difference means that the determinants can be reasonably ranked in welfare terms, while a horizontal difference means they cannot. The rows represent determinants that can and cannot be manipulated through policy.

The goal of this categorization is to clarify the contexts in which development policy interventions can address development challenges and contexts in which they likely cannot. We begin with the upper right cell which in some sense is the canonical case in development economics and the situation in which development policy interventions are most clearly justified.

### 2.1 Vertical, Manipulable

Vertical and manipulable determinants of prosperity are those that have a clear ranking and can be affected directly (i.e., manipulated) through development interventions. A clear case which would lie in this cell are health inputs. People in poor countries have several pathogens and diseases that harm human health, which are not present in rich countries, and this has a clear welfare ranking. They also have far less access to modern health facilities and technologies. Moreover, health outcomes can be directly affected by policy in many ways, including through targeted medical interventions (e.g., [Baird et al., 2016](#); [Bleakley, 2007](#); [Miguel and Kremer, 2004](#)), investment in public health infrastructure

**Figure 1: Classical Determinants Matrix**

	Horizontal	Vertical
Manipulable	Comparative Advantage Location of Cities Location of Infrastructure	Health Inputs Education Inputs Access to Credit Absence of Corruption
Not Manipulable	(Some) Geographic Endowments	Temperature Proximity to the Coast (Not Being) Landlocked

*Notes:* This figure displays the matrix of classical determinants of development. Vertical determinants are those that can be reasonably ranked in welfare terms and horizontal determinants are those that cannot be. Manipulable determinants are those that can be changed through policy or development intervention, and non-manipulable are those that cannot be. The list of determinants is not meant to be exhaustive but just includes the examples that we refer to in the text.

(e.g., [Alsan and Goldin, 2019](#)), or disease control and eradication programs (e.g., [Bleakley, 2010](#); [Denton-Schneider and Montero, 2025](#); [Lucas, 2010](#)).

All of these features lead to very precise policy conclusions: there is a clear role for direct health interventions that improve well-being. Note in this case the determinant, namely deficient health inputs, is endogenous to many factors, including investment in public health, nutrition, and local ecological conditions. Hence a determinant does not have to be an exogenous variable either in the econometric or common-language sense.

Many other differences between countries which have been emphasized in the literature also seem to fit in this cell of the matrix. These include low levels of educational inputs (e.g., [Duflo et al., 2021](#)); the presence of liquidity and credit constraints that inhibit investments with high returns ([Banerjee et al., 2015](#); [Egger et al., 2022](#)); frictions or barriers that inhibit trade, specialization or technology adoption ([Conley and Udry, 2010](#); [Foster and Rosenzweig, 1995](#)); many governance challenges, such as teacher absenteeism ([Chaudhury et al., 2006](#)), or corruption ([Olken and Pande, 2012](#)); or differences in economic institutions, such as the security of property rights ([Demsetz, 1967](#); [Di Tella et al., 2007](#); [Field, 2007](#); [Goldstein and Udry, 2008](#)).

## 2.2 Horizontal, Non-Manipulable

Next, we turn to the polar opposite case where it is not possible to rank the determinants in terms of welfare and they also cannot be manipulated by policy.

A salient example in this cell would be differences in geographical factor endowments, as in standard models of international trade. While some differences in factor endowments can be affected by policy, especially in the long run, some differences could stem from geology or ecology which influence the nature of agricultural specialization. They might also depend on location; for example, global positioning can make it possible for a country like Singapore to become an entrepôt. Standard trade theory suggests that these differences are horizontal: there are gains from trade and specialization. Ghana can grow cocoa and benefit from specializing in this while importing manufactured goods produced elsewhere. We all benefit from the services provided by an entrepôt. Many of these are also non-manipulable—we cannot change geography or location. A concrete policy response is also associated with this cell: free trade between countries with different sets of endowments is mutually beneficial. However, this involves bilateral changes in trade policy and cannot be accomplished through interventions only in poor countries.

The previous section described how, in some cases, direct policy interventions in developing countries can address health challenges caused by adverse disease environments. However, there are also a range of horizontal differences in environmental conditions—differences in local ecology that are not inherently “better” or “worse.” These differences may also pose challenges that matter for development, but is it more complicated to address them through direct policy intervention in the country itself. For example, some health disparities between high and low income countries are due to the fact that innovation is focused on diseases that affect high-income populations. Thus, poor countries face greater health challenges not necessarily because their ecological conditions are worse in some absolute sense (i.e., not because there are vertical differences in the environment) but because their ecological conditions have been ignored by scientists and innovators (Hotez, 2021; Kremer and Glennerster, 2004). A similar story is true in agriculture, where the uneven focus of innovation across rich-world and poor-world ecological conditions sustains global disparities in agricultural productivity (Moscona and Sastry, 2025). This is consistent with the fact that there is little evidence that geographic and ecological conditions are *ex ante* much worse for agriculture in poor countries (Adamopoulos and Restuccia, 2022).

Together, these findings suggest that a large part of the effect of ecology on development is mediated by endogenous forces like innovation. Acemoglu et al. (2026), in the this Handbook, describe the role of “inappropriate technology” in economic development more broadly. Here too, the policy “solution” is clear: shift the focus of innovation so

that it also tackles ecological challenges in developing countries (see [Kremer et al., 2020](#)). However, only in rare instances is this likely to be possible through direct development interventions in developing countries (e.g., [Akerman et al., 2025](#)) since the vast majority of innovation takes place in high-income parts of the world.

### 2.3 Vertical, Non-Manipulable

Next, we move to vertical differences and explore the non-manipulable bin. Here, the obvious example would be geographical differences that *do* have direct, causal effects on economic development (see [Dupas, 2026](#), for a review). The idea that climate is an important determinant of prosperity goes back at least to Montesquieu in the 1700s and empirical work by [Spolaore and Wacziarg \(2013\)](#) argues that there are negative development effects of being located in the tropics, of proximity to the equator and of being landlocked.<sup>3</sup>

More recently, especially with mounting concerns about global warming, a large number of studies have investigated the impact of temperature on development. [Dell et al. \(2012\)](#) present evidence that higher temperatures reduce economic growth, especially in poor countries (see [Dell et al., 2014](#), for a review). Exploiting long-run changes in temperature across European cities during the little ice age, [Waldinger \(2022\)](#) argues adverse climatic conditions have long-run negative effects on development. Any direct, causal effect of the environment on development would count as a vertical factor which is non-manipulable through direct policy intervention (though of course policy *could* affect how resilient or adapted developing regions are in the face of adverse climatic conditions).

### 2.4 Horizontal, Manipulable

The final bin in the classical matrix is one where the determinants are horizontal but are nevertheless manipulable through policy. Potential examples of this are the location of cities and resulting agglomeration effects. While these effects exist ([Ellison and Glaeser, 1997](#)), there is no presumption that there is an obviously unique and optimal distribution of city locations. Similarly, for infrastructure there is evidence that road building facilitates more efficient allocation of resources ([Asher and Novosad, 2020](#)) and railways promote trade and prosperity ([Donaldson, 2018](#)), but little evidence that *ex ante* these roads or railways have to be in particular places to do this, unless there is some very specific natural resource to be accessed or cost to be avoided (e.g., [Balboni, 2025](#); [Kocornik-Mina et al., 2020](#)). Research on path dependence suggests that there is indeterminacy in the

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<sup>3</sup>Other works, however, find no causal effect of these cross-sectional differences in geography on income per capita arguing that they happen to be correlated with the historical construction of institutions ([Acemoglu et al., 2001, 2002](#)).

location of economic activity and that historical factors, even when temporary, can select one equilibrium among many (Bleakley and Lin, 2012; Michaels and Rauch, 2018).

### 3 Challenges of Manipulation in a Classical World

The previous section highlighted that development interventions are most likely to be effective when they target vertical and manipulable determinants. Even in these contexts, however, policy interventions can face major and often unexpected challenges. One reason for this, which economists and other social scientists have observed for several decades, is the fact that differences across societies in these classical determinants are often intertwined with differences in culture, social organization, religion, marriage practices, etc. Variation in these non-classical characteristics—which we turn to directly in subsequent sections of this chapter—can shape the impact of even seemingly straightforward policy interventions, in some cases causing them to have little impact or even backfire.

As a result, many classical determinants may not be as manipulable as they initially seem. To accommodate this reality, Figure 2 presents an updated version of the classical determinants matrix from Figure 1. It includes a middle row for determinants that are partly manipulable. All of these characteristics have been the subject of substantial policy intervention. Yet, as we make clear through a series of examples in the following paragraphs, policy intervention in all of these areas is mediated (and in some cases undermined) by features of local context that are often ignored by policymakers.

Raising food production in developing countries has long been a focus of development economics and development policy more generally. For example, Ferguson (1994) describes a large-scale World Bank program to modernize animal husbandry in Lesotho, which was characterized as supposedly having a “traditional, subsistence peasant economy.” This gave rise to severe over-grazing and a tragedy of the commons. Interventions included the creation of markets to allow for sales of “excess” cattle and encouragement to create stock holders associations to internalize the negative externalities. Thus, the goal of the program was in essence to improve the structure of property rights—the first characteristic listed in the vertical and partly manipulable bin of Figure 2.

However, Ferguson (1994) argues that this entire program was built on a false premise: the economy in Lesotho was not built on animal husbandry but instead based on migrant laborers working in mines in South Africa, who maintained cattle in Lesotho as a strategy to store wealth and maintain patronage relationships. Cattle also had important cultural value because of their importance for bride price payments, as well as their role in ritual exchanges and in establishing social status. The program ultimately had no effect on

**Figure 2: Classical Determinants Matrix: Adding Partly Manipulable**

	Horizontal	Vertical
Manipulable	Comparative Advantage Location of Cities Location of Infrastructure	Health Inputs Education Inputs Access to Credit Absence of Corruption
Partly Manipulable	Economic Specialization	Structure of Property Rights Agricultural Technology Use Educational Attainment Saving and Asset Accumulation Social Support Access to Credit
Not Manipulable	(Some) Geographic Endowments	Temperature Proximity to the Coast (Not Being) Landlocked

*Notes:* This figure displays the matrix of classical determinants of development. Vertical determinants are those that can be reasonably ranked, and horizontal determinants are determinants that cannot be. Manipulable determinants are those that can be changed through policy or development intervention, and non-manipulable are those that cannot be. Relative to the previous version of the classical matrix, we have added a row for partly manipulable determinants. The list of determinants is not meant to be exhaustive but just includes the examples that we refer to in the text.

over-grazing because it was misaligned with the local political and social reality.

Looking further back in history, [Lansing \(2009\)](#) describes the arrival of the Green Revolution in Bali during the 1970s and 1980s. Under World Bank guidance, the Balinese government encouraged rice farmers to adopt high-yielding rice varieties, chemical fertilizers, and strict planting schedules. For many centuries, these farmers had synchronized planting and harvesting across fields and regions. Local irrigation associations were coordinated by temple priests, not government officials, who used ritual calendars tied to the lunar cycle to synchronize planting and irrigation across entire watersheds. These practices—viewed as “backward” and “superstitious”—were pushed aside as farmers were induced to move into more rapid and personalized planting schedules.

The goal of the World Bank program was to encourage improved agricultural technology use. Local religion and ritual was seen as a hindrance to that aim and, as a result, the government discouraged adherence to traditional planting patterns that followed recommendations from water temples, and often excluded traditional leaders from local

planning and policy decisions. Thus, in addition to altering a classical determinant (i.e., agricultural technology use), the program also (explicitly and implicitly) attempted to alter a non-classical characteristic of society (i.e., the role of water temples and priests; we discuss policies designed to alter non-classical determinants in detail in Section 4). However, unbeknownst to policymakers at the World Bank or in government, the synchronization that was maintained by the previous system was crucial for keeping rice pest populations at bay. The switch to the Green Revolution technology mix led to widespread pest outbreaks and crop failures that took decades to recover from. More generally, [Suri and Udry \(2022\)](#) explain that a broad set of attempted policy interventions have failed to meaningfully increase agricultural technology use in developing countries.

Recent studies in development economics have also documented ways in which differences in local culture can mediate or even undermine policy interventions that target other classical determinants of development, from savings to educational attainment to social support, all of which are listed in the middle row of Figure 3.

For example, [Godoy et al. \(2021\)](#) investigate the consequences of promoting a savings lockbox among the Tsimane, an indigenous horticultural-forager society in the Bolivian Amazon that has very limited exposure to formal markets, savings institutions, and modern financial infrastructure. The authors conducted an RCT in which treatment households received a small wooden savings lockbox while control households received a set of plates of roughly equivalent value. A key goal of the study, beyond increasing the savings rate, was to reduce alcohol consumption, which was high among the Tsimane plausibly because the absence of savings technology led individuals to spend on temptation goods. The authors found that assets increased in the treatment group, consistent with the lockbox having an impact in savings. However, they also found large *increases* in alcohol consumption and blood pressure, especially among men.

What can explain these seemingly counterintuitive results? To answer this question, the authors returned to the study setting and conducted ethnographic fieldwork. They concluded that the results can be explained through a deeper understanding of Tsimane culture, namely that “sponsoring drinks confers prestige.” As a result, when individuals had access to better savings technology, they were able to purchase more and higher value alcohol. Nobody had mentioned this custom to the researchers during the baseline surveys because the group’s previous experience with religious missionaries had taught them that outsiders view alcohol consumption negatively.

The specific customs and historical experience of the Tsimane meant that this “standard” development intervention—providing a secure savings location—backfired in an important way. The authors highlight the importance of combining standard economic

methods with ethnographic fieldwork in order to understand how interventions interact with differences across societies. They also describe the challenges associated with this kind of work: the historical experience of the Tsimane made it challenging for the authors to learn relevant information about the local context and how it would affect their intervention. Nevertheless, a growing number of papers highlight the importance of qualitative analysis alongside RCTs, especially when causal estimates are inconsistent with the researchers' priors or inconsistent with other contexts (Ananthpur et al., 2017; Atkin et al., 2017; Hanna et al., 2016). Developing new tools to combine ethnographic work with experimental design could be an exciting area of future research.

Beyond RCTs, there is a growing number of studies documenting that the effectiveness of national policies at achieving their stated goals can vary substantially across cultural contexts. These include standard development policies that economists have been studying for decades. For example, Ashraf et al. (2020) study the impact of school construction in Indonesia and Zambia on the education of girls. They find that in both contexts, new schools increase girls' education, but only in places where bride price customs are practiced. Among these families, incentives to educate daughters is higher because higher education is associated with higher bride price transfers. If the policy goal is to increase education for girls, these results suggest that simply building new schools does not accomplish that goal for a substantial share of the population. This poses a key challenge for policy makers hoping to raise educational attainment using standard approaches.

Another example comes from Uganda's pension program, which was rolled out starting in 2013. The goal of the program was not only to increase the amount of money in the hands of the elderly, but also to improve the well-being of children, perhaps motivated by earlier evidence that grandparents tend to invest some portion of pension money in their grandchildren (Bertrand et al., 2003; Duflo, 2003). While the program had positive effects on child health in parts of the country where family ties are strong, it had *zero* effect on child health in places where age sets—relationships between individuals in the same cohort which often take precedence over family ties—dominate (Moscona and Seck, 2024).<sup>4</sup> The result that grandparents in age set societies do not share pension grants with their grandchildren was corroborated using evidence from a large-scale RCT that simulated a pension program in Northern Kenya. Inter-generational ties in age set societies are often weak, potentially explaining this result. As one example, among the Maasai in nearby

<sup>4</sup>While uncommon in the West, age set organization is common in sub-Saharan Africa and over 200 million people live in ethnic groups where age sets are the traditionally dominant form of social organization (Moscona and Seck, 2024). In these areas, people in the same or similar age cohorts form strong bonds, often reinforced through initiation rituals and other ceremonies, that persist throughout the life cycle and shape social, economic, and political ties.

Kenya and Tanzania, individuals often have little or no relationship with their extended family, including grandparents, and “it is toward age mates that men look for support rather than brothers or close patrilineal kin” (Spencer, 2014, p. 48).

This finding does not mean that the pension program was a failure in parts of the country where age sets are present—surely the elderly benefited from additional resources. But if a goal of the program was to increase welfare of young children, it did not accomplish that goal in large parts of the country and alternative policy approaches would need to be explored. These examples explain why it might make sense to place educational attainment, social support, and child health in the “partly manipulable” row of Figure 2.

Finally, a small number of studies have shown that policy interventions focused on classical determinants can affect local culture directly. The medium and long-run effects of these changes are not well understood, yet they could be a major component of the overall welfare consequences of standard policy interventions. For example, Bau (2021) finds that the introduction of national pension programs in Ghana and Indonesia affected local residence patterns, whereby individuals who would traditionally be expected to reside near either their parents or their spouse’s parents become less likely to do so once the elderly are supported (in part) by the state. While there may be benefits to this flexibility, there could also be costs to the weakening of these family ties, especially if the pension policy is later reversed or loses funding. Moreover, Bau (2021) documents that the pension program reduced investment in child education, perhaps because parents have weaker incentives to invest in children who will no longer take care of them in old age. Thus, a large part of the economic impact of this standard policy intervention likely comes from its effects on local culture.

In another example highlighting the potential effects of standard development interventions on local social organization, Banerjee et al. (2024) show that the introduction of microfinance in Indian villages substantially shrinks social networks, using evidence from both an RCT and reduced-form policy evaluation. This is driven in part by large “network externalities”— meaning that social networks decline even for individuals who are not themselves connected with a microfinance institution—and the people who experience the largest decline in social ties are in fact those who are *least* likely to take up microcredit. This decline in social ties could have major welfare costs even if overall access to credit increases. Moreover, it potentially makes communities less resilient to new shocks if the microfinance institutions pull out. Further understanding the effect of interventions targeting classical determinants on local social organization seems like an important area for further research. These knock-on effects could be especially impactful in the longer run.

Together, this body of work highlights the interplay between policies designed to target

classical determinants of development, and the substantial variation around the world in non-classical characteristics. This evidence complicates the framework outlined in Figure 1 and has led us to argue that many classical determinants are only partly manipulable through policy intervention (see Figure 2). Given their importance, there has been a recent rise in research in economic development that focuses directly on these non-classical differences. In the next section, we introduce this body of work and describe how it fits into (and challenges) the framework described by Figures 1 and 2.

## 4 Non-Classical Determinants of Development

We now take our framework introduced in Sections 2 and 3 and apply it to non-classical determinants of economic development. By non-classical we have in mind determinants such as cultural values, beliefs, aspirations, norms, identities, religious values, traditions, and customs.<sup>5</sup> All of these have by now been widely studied.<sup>6</sup> The field of economic development has come to realize the importance of these non-classical differences for economic development (e.g., [Bertrand and Duflo, 2017](#); [Rao et al., 2019](#); [World Bank, 2015](#)), and as a result, they are also increasingly the subject of both policy interventions and academic research.

A key focus of this work has been trying to understand how these non-classical traits can be changed, altered, or replaced, as well as the consequences of doing so. One example is [Bernard et al. \(2025\)](#), who show video documentaries in rural Ethiopian villages about the economic success of individuals in similar circumstances in an attempt to change individual aspirations. Other studies target beliefs; for example, [Bryan et al. \(2021\)](#) attempts to change religious beliefs through a randomized intervention that delivers a theology program teaching evangelical Christian values to poor households in the Philippines.

A large number of studies investigate attitudes toward disadvantaged groups and how they can be shifted, plausibly the context in which it is easiest to argue that there is a clear vertical ranking across beliefs and behavior. A salient case would be local gender norms. As one example, [Dhar et al. \(2022\)](#) propose an intervention to change the gender attitudes of adolescents in Haryana, India by engaging students in structured classroom

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<sup>5</sup>There are many theories of why societies vary along these lines. One set of ideas is that because of the challenges of decision making in complex environments and of sustaining cooperation in social groups, societies have evolved a host of heuristics that facilitate effective decision making and sustain cooperation (see [Gelfand et al., 2024](#); [Henrich, 2016](#); [Nunn, 2021](#), for overviews).

<sup>6</sup>These are terms used by scholars, inside and outside of economics, to capture social and psychological factors important for human behavior. Different terms often refer to similar aspects of human decision making and, confusingly, the same terms are often used to mean different things in different fields (e.g., beliefs).

**Figure 3: Non-Classical Determinants Matrix**

	Horizontal	Vertical	Reverse Vertical
Manipulable	Food Cultures and Tastes	Property Rights Regime Management Practices	Property Rights Regime Management Practices
Partly Manipulable	National Identity Social Structure	Kinship Relations Individualism / Collectivism Fertility Norms Level of Trust State Capacity Social Capital Redistribution Norms Gender Equality	Kinship Relations Individualism / Collectivism Fertility Norms Level of Trust State Capacity Social Capital Redistribution Norms
Not Manipulable	World Views Ontology	Big God Beliefs Analytic / Holistic	Big God Beliefs Analytic / Holistic

*Notes:* This figure displays the matrix for non-classical determinants. Relative to the classical matrix, we have added a row for partly manipulable determinants and a column for reverse vertical determinants. Individual determinants often fall into multiple bins (e.g., if in some contexts they are vertical while in others they are reverse vertical). The list of determinants is not meant to be exhaustive but just includes the examples that we refer to in the text.

discussions over a two-and-a-half-year period. [Bursztyn et al. \(2020\)](#) focus on the role of second-order beliefs and study the impact of an information intervention that corrects misperceptions about gender norms in Saudi Arabia. [Lowe \(2021\)](#) investigates the effects of adversarial and collaborative contact on prejudice and relations between people of different castes in India. The intervention created cricket teams and examined the effects of being placed on a homogeneous vs. mixed team. [Webb \(2025\)](#) investigates how experimentally induced communication between non-transgender people can reduce discrimination against transgender people.

Although we have a fairly good understanding of the mechanics behind interventions that aim to improve health, infrastructure, or investment in factories and machines—though Section 3 suggested that this understanding is not always as good as we may think—the same is less true once we begin to think of interventions that target norms, identity, values, customs, etc. This is, in part, because they are less tangible, harder to observe, and as a result, more under-theorized. These determinants have only been intensively studied more recently, and economists are coming to realize the interventions often have surprising and counterintuitive effects. Non-classical characteristics of soci-

ties can often serve important roles or functions economists and policymakers do not understand. Given these differences, the following sections describe how our framework for development interventions needs to be amended for policies that target non-classical determinants.

#### 4.1 Partly Manipulable

Section 3 argued that many classical determinants of economic development can only be thought of as partly manipulable by policy. The impact of standard policy interventions have varied and even adverse consequences across different contexts. The challenges associated with manipulating local characteristics becomes even more pronounced when we turn to non-classical characteristics of individuals and societies. There is evidence that backlash against policies that target non-classical traits can be significant (e.g., [Fouka, 2020](#); [Wheaton, 2022](#)). Moreover, the effects of policies can be different (and work in different directions) at the conscious and subconscious levels ([Beaman et al., 2009](#)). External enforcement or incentives can even directly crowd out the form of behavior it is trying to promote ([Bowles and Polania-Reyes, 2012](#)).<sup>7</sup>

To recognize this important aspect of non-classical determinants of development, our non-classical matrix, shown in Figure 3, also includes a partly manipulable row. As we have noted, the categories are meant to help organize our thinking rather than being a definitive classification. That being said, one could argue that, given our current state of knowledge, many (if not most) non-classical determinants lie in this category.

For illustration let us focus on some of the examples in the partly-manipulable row. Under horizontal traits we have included the characteristics of a country's national identity, such as their origin narratives, the identity of national heroes, sources of national pride, etc. We don't think that there is vertical ordering such that some are better than others. Instead, these are best understood as different. The same is arguably true for social structure, which is the second example in the cell. For example, we do not have a strict or clear vertical ordering based on whether descent is patrilineal or matrilineal, ambilineal, or bilateral. Thus, social structure is an example of a partly manipulable, horizontal trait.

The second column in the partly manipulable row is for vertical determinants. Examples in this cell include determinants that the current literature has identified as being clearly better or worse for economic development. Here we have included kinship relations, since [Enke \(2019\)](#) argues that weaker kinship ties are associated with better economic development. Others have argued that individualism is beneficial for economic development and collectivism detrimental ([Gorodnichenko and Roland, 2017](#)). We include fertility

<sup>7</sup>See [Lowes et al. \(2017\)](#) for evidence of this using a historical natural experiment.

next (which we return to below), followed by trust, which [Algan and Cahuc \(2010\)](#) have shown is correlated with economic growth. Similarly, the dominant view in the literature is that state capacity; social capital; and gender equality (just as examples) are important factors for economic growth.<sup>8</sup> By contrast, the dominant view in the literature is that norms that encourage redistribution, because they distort investment, are detrimental to economic growth ([Carranza et al., 2025](#); [Jakiela and Ozier, 2016](#); [Squires, 2024](#)).

There is some evidence that these determinants can be influenced, particularly if one looks over longer periods of time. [Depetris-Chauvin et al. \(2020\)](#), for example, show how events like national soccer matches can have a short run effect on national identity. School curriculum reform ([Cantoni et al., 2017](#)) and participation in national celebrations like the 4th of July in the U.S. ([Madestam and Yanagizawa-Drott, 2012](#)) can also lead to more positive views of the state, and concerted policy effort can lead to “nation building” that favors national over ethnic forms of identification ([Carlitz et al., 2024](#); [Miguel, 2004](#); [Blanc and Kubo, 2025](#)). As noted above, policy interventions can shape family ties and social relationships ([Banerjee et al., 2024](#); [Bau, 2021](#); [Fetter et al., 2022](#)). Historical evidence suggests that states have changed from patrilineal to matrilineal systems of inheritance ([Vansina, 1978](#)).

Other evidence suggests that not just horizontal but also vertical determinants can eventually be altered. Cousin marriage has been successfully banned ([Ghosh et al., 2023](#)), making kinship ties weaker (in Enke’s terminology). Rapid social change has been argued to foster individualism in society, for example in China ([Yan, 2020](#)). [Nunn and Wantchekon \(2011\)](#) show how Africa’s trans-Atlantic and Indian Ocean slave trades led to persistently lower levels of trust on the continent. Many studies have analyzed interventions for improving state capacity ([Acemoglu et al., 2020](#); [Balan et al., 2022](#)) and over longer periods of time state capacity can clearly be accumulated. [Putnam \(1993\)](#) and [Tabellini \(2010\)](#) also show how political institutions shape social capital over the long-run. Finally, [Alesina et al. \(2013\)](#) document how gender norms have been influenced by the technologies used in agriculture which tended to include (hoe agriculture) or exclude (plow agriculture) women from production.

While these examples clearly show that non-classical determinants are endogenous to a range of forces, we are far from understanding exactly how these characteristics of societies evolve; the extent to which policies can influence them; which policies specifically would be the most effective at doing so; or the various ways that changing these characteristics could affect welfare. Thus, although in theory one can imagine changing these characteristics

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<sup>8</sup>On state capacity see [Besley and Persson \(2011\)](#); on social capital see [Knack and Keefer \(1997\)](#); on female empowerment, see [Duflo \(2012\)](#) as well as [Hsieh et al. \(2019\)](#) on the macroeconomic consequences.

through policy intervention, doing so in practice might be very difficult. Figure 3 has many other determinants, such as management practices and property rights regimes and we will discuss these as we introduce them below.

## 4.2 Allowing for the Possibility of the Reverse Vertical

The matrix also has a new third column, labeled “reverse vertical.” This column recognizes that once one is discussing non-classical determinants, there is much less certainty about the ordering of a society’s characteristics in terms of economic development. This third column allows for the possibility that certain determinants of development that are often perceived as negative can actually be positive (and vice versa). This may not be the case universally. It may only be true at certain points in time, for certain societies, or for a particular preference ordering over outcomes. As a result, there are some determinants that we have placed in both the vertical and reverse vertical categories. As above, these categorizations are meant to be illustrative and neither definitive nor comprehensive.

Although we are quite certain that geohelminths (ground worms) are bad for one’s health and poor health impedes economic development, we are much less certain about whether something as (seemingly) uncontroversial as state capacity is good for economic growth and welfare. While state capacity makes it possible to effectively collect taxes, provide public goods, or enforce property rights (see [Acemoglu et al., 2015, 2016](#); [Dell et al., 2018](#)), recent evidence highlights how state capacity also makes state repression possible. [Heldring \(2020\)](#) documents, using a geographic regression discontinuity design at the boundary of the former Prussian state, that higher levels of state capacity led to more persecution of Jews during the Nazi period in Germany, and [Heldring \(2021\)](#) shows that exposure to state institutions led to greater violence during the genocide in Rwanda. The latter study highlights obedience of state authority, which can be co-opted to encourage violence, as an important mechanism.<sup>9</sup>

Another example is social capital. While there are numerous studies reporting evidence of the potential benefits of social capital for development ([Guiso et al., 2011](#); [Knack and Keefer, 1997](#), for a review), other work documents how the strong social ties that come with high levels of social capital can be co-opted and used in ways that are harmful to economic development. For example, high levels of social capital can help explain the rise of the Nazi Party in Germany ([Satyanath et al., 2017](#)).<sup>10</sup> Thus, we also place social capital in the reverse vertical category as well.

<sup>9</sup>Recent causal findings from [Marx et al. \(2025\)](#) can be interpreted with a similar lens, suggesting that stronger support of incumbent leaders might not be better for economic growth.

<sup>10</sup>Moreover, using rich sub-national data, [Miguel et al. \(2005\)](#) find no evidence that social capital predicts industrial development in Indonesia.

Similar (conceptual) arguments can be made for trust. It is possible that too much trust is not optimal, at least at the individual level (which is often the unit of analysis in development interventions). [Butler et al. \(2016\)](#) argue that the most trusting individuals are worse off, and hypothesize that this is because they are excessively inclined to take risks that lead to them being cheated. Thus, at least for a range of trust, more trust can be reverse vertical.

It is also possible that more individualism is not optimal and that, in certain settings, collectivism may be better. One example is that collectivist societies were much more successful during the COVID pandemic, measured by either mitigation, number of cases, or number of deaths (e.g., [Lu et al., 2021](#); [Maaravi et al., 2021](#)). Thus, it is possible that during times that require individual sacrifice and collective action, individualism is reverse vertical. Because of these possibilities, we also place trust and individualism/collectivism in the reverse vertical column. One can also make a similar case for kinship relations, property rights regimes and management practices, as we will see shortly.

The reverse vertical can even arise for traits that are viewed as not manipulable. For example, belief in a big god—a universal moralizing high god—has been argued to have been important for large scale cooperation and economic development ([Ensminger and Henrich, 2014](#); [Norenzayan, 2015](#)). However, recent scholarship also shows that it is associated with greater intolerance and violence, historically and in the present ([Barber et al., 2023](#); [Colussi et al., 2024](#); [Le Rossignol et al., 2025](#); [Skali, 2017](#); [Solá, 2025](#)).

Lastly, although we didn't allow for the possibility of the reverse vertical in Figures 1 or 2 where we looked at classical traits, even here one can find examples of it. For example, [Nunn and Puga \(2012\)](#) find that an absence of rugged terrain is beneficial for development in general, but this relationship does not hold in Africa, where rugged terrain inhibited the expansion of the slave trade. [Acemoglu et al. \(2002\)](#) also show that among former colonies, geographic factors that led to economic prosperity prior to 1500 had the opposite effect in the period that followed. We will return to a more in depth discussion of potential sources of reverse verticality in Section 6.

### 4.3 Policy Interventions and Disrupting Local Equilibria

A key source of the challenge of targeting non-classical determinants is that, even more than for classical determinants, their causes and consequences are intimately tied to the local environment. Non-classical factors are themselves multidimensional, connected in complex ways to each other, with the configuration that we see today being the result of a historical and evolutionary processes ([Nunn, 2021](#)).

One informal conceptual framework for thinking about why we might want to ma-

nipulate non-classical determinants of development is that societies around the world are in different equilibria. These could be equilibria regarding cultural values, social norms, practices, traditions, etc. Some equilibria are better for economic development than others. For example, some facilitated higher levels of economic prosperity, greater equality, and greater aggregate welfare than others. The exact reasons for these differences and why they are stable have been the focus of research and debate for decades.

One motivation for policy interventions that attempt to alter some characteristic of society is that the right intervention could successfully move societies that are in a worse social equilibrium to a better one. The difficulty in practice is that while the theoretical justification for a policy intervention is a macro-level change, interventions themselves are typically much more local than this and therefore unlikely to move the entire society to a new social equilibrium. It is almost always infeasible to treat the full population, either because of resource constraints or because a subset of the population must (at least initially) remain untreated to evaluate the program.

In the end, while the aim is for a movement from one society-wide equilibrium to another, in practice policy interventions may instead be moving individuals away from their best responses. It is worth reflecting about what implications this would have. Given what we know about the nature of cultural values and norms, the starting assumption should be that in general people are optimizing given the environment they face, which includes the information they have, the constraints they face, and how others will respond to their actions. As a thought experiment, consider the case where one person is induced to take an action that is different from what they were doing initially. If their initial actions were optimal, then deviations from these actions will make them worse off.<sup>11</sup>

If there are externalities and/or strategic interactions, the same logic holds. Take, for example, the case where individuals in society are playing prisoners' dilemmas with each other. If the society in question is one where everyone defects and this is the Nash equilibrium, then inducing one person to cooperate will make them worse off. This is true despite the fact that in "good equilibrium" contexts, everyone is playing cooperatively.<sup>12</sup>

To see these challenges more concretely, consider programs that attempt to alter behavior by changing gender attitudes and gender norms. A recent program along these lines was studied by [Cullen et al. \(2025\)](#). It was a first-of-its-kind large scale government-managed intervention in Rwanda that was "designed to prevent (IPV) [intimate partner violence] by improving couples marital communication skills, changing conservative gen-

<sup>11</sup>Note that this point is distinct from the standard second-best argument of [Lipsey and Lancaster \(1956\)](#).

<sup>12</sup>This challenge is potentially quite general. A recent survey by [Ferraz and Finan \(2026\)](#) makes a similar point for political equilibria. They explain that while incremental political interventions might have some local effects, it is unlikely that they will affect the long-term political equilibrium.

der attitudes, and promoting new progressive gender norms in the community" (Cullen et al., 2025, p. 1). The program was led by Rwanda's Ministry of Gender and Family Promotion but implemented by local and international NGOs. It comprised 22 weeks of group discussions and activities, led by trained facilitators, combined with take-home exercises.

Studying the experience of 2,042 couples from 98 villages, the authors found that the program led to a sizable *increase* in intimate partner violence. Depending on the exact form of the violence, the occurrence increased by 5–10 percentage points, with the largest effect observed for sexual violence. They also observed spillover effects for couples who were not in the program but lived in villages where the program took place. Here the magnitude of the adverse effects ranged from 7–17 percentage points, again, with the largest effect for sexual violence. These effects are in line with the findings of an earlier program, also in Rwanda, implemented between 2015 and 2018 (Chatterji et al., 2020).

The consequences of the program were clearly unintended and they highlight the challenges and unforeseen consequences that can arise when intervening to change norms or cultural beliefs. The evidence, combined with *ex post* interviews to understand the findings, suggest that the program induced women to expect more progressive outcomes and act accordingly. Men's attitudes either became less progressive or slightly more progressive (but always changed less than women's attitudes). The result was a misalignment between the expectations and actions of the couple, which, in some cases, resulted in violence. Although the original equilibrium was globally suboptimal, policy intervention that disrupted it by encouraging larger deviations by some participants than others possibly made the population worse off.

The unintended consequences found in this study are not unique. Other studies that have been careful to explicitly measure potential backlash effects, have found them. For example, Cullen et al. (2024) find evidence of backlash effects for a female empowerment program in India, as do Bulte and Lensink (2019) for a women's empowerment program in Vietnam. As noted, another high intensity program in the same country found fairly similar effects (Chatterji et al., 2020). In addition, studies have also found evidence of backlash against policies and interventions in a broad range of contexts (e.g., Colonnelli et al., 2024; Fouka, 2020; Heath, 2014; Wheaton, 2022).

This said, backlash is not universal—the details of the intervention and/or local context appear to matter. A potential explanation for the variation is that the Rwanda program was particularly ambitious, lasting over an extended period of time and involving both husbands and wives. Results from a prior meta analysis suggest that this might be important (Leight et al., 2023). It finds that "high intensity" interventions tend to be less

beneficial and are estimated to have negative impacts on average.<sup>13</sup> Thus, one possibility is that more ambitious policy interventions can cause a larger deviation from the initial social equilibrium which can generate larger adverse consequences.<sup>14</sup>

Also relevant is evidence from observational studies suggest that expanded economic opportunities for women can, over time, lead to reductions in IPV. [Frankenthal \(2024\)](#) shows that exogenous changes in female labor market opportunities in Peruvian agriculture reduced domestic violence, and [Sanin \(2023\)](#) finds similar results studying the expansion of coffee mills in Rwanda. Thus, while policy interventions that directly target gender norms seem to lead to backlash, longer-run economic changes that increase opportunities for women may do the opposite. Thus, one interpretation of the body of evidence is that changes in IPV seem to be driven by shifts in economic equilibria rather than attempts to directly manipulate local norms or beliefs.

#### 4.4 Recent Trends in Development Economics

There has been a dramatic rise in research in development economics about non-classical characteristics of society. However, despite the major differences between classical and non-classical determinants—including the challenges associated with policy intervention and manipulation as well as the possibility of reverse vertical traits—we show suggestive evidence that important parts of the approach to research has, by and large, not changed. The focus on the vertical and manipulable bin of the matrix has persisted, despite the fact that it seems likely that fewer non-classical traits can be categorized as such. The point of this exercise is not to critique existing research but rather—as we explain in the next section—to ask whether we may be missing important research and policy opportunities.

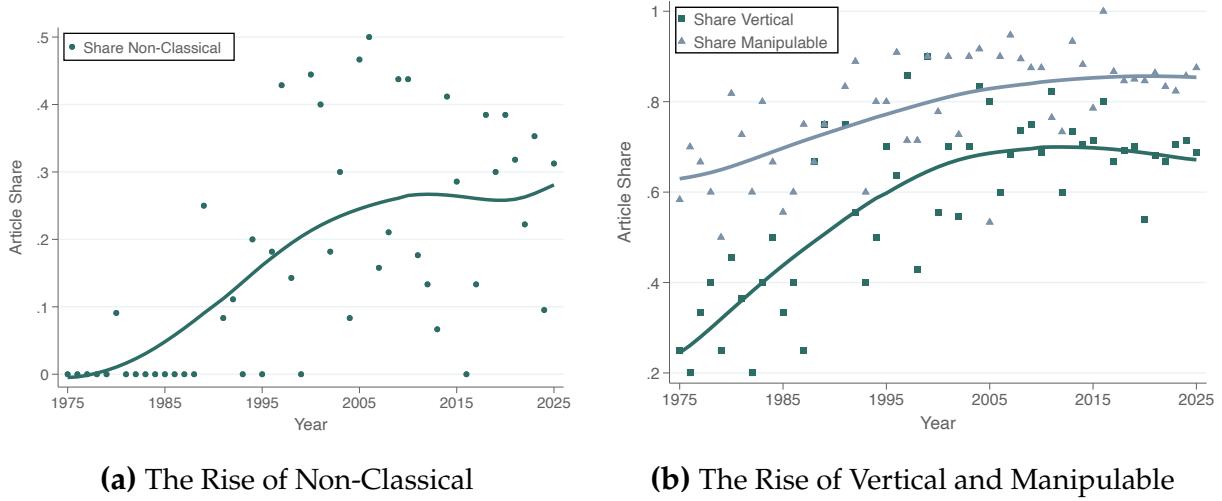
We analyze the text of both published articles on development economics in the *Quarterly Journal of Economics* (QJE), making it possible to document long-run trends, and all RCT proposals entered in the American Economics Association (AEA) RCT registry from 2013 to the present. Using the title and abstract of all collected articles and studies, we implemented a large language model (LLM)-based classification procedure with OpenAI's GPT-5 to determine (i) whether each focuses on an underlying trait that is classical or non-classical, (ii) whether the author(s) describe that trait as being vertically rankable or not, and (iii) whether the trait is described as manipulable or not manipulable by the

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<sup>13</sup>See, in particular, Table 3 of [Leight et al. \(2023\)](#).

<sup>14</sup>Another potential explanation is measurement quality. [Cullen et al. \(2024\)](#) went to great lengths to ensure that reporting, combined with demand effects, did not generate (false) benefits. Previous studies have shown that, given the sensitivity of the topic, the method of information collection matters ([Cullen, 2023](#)).

**Figure 4: Papers from the Quarterly Journal of Economics**



*Notes:* Figure 4a displays the share of QJE articles related to economic development that focus on non-classical determinants in each year from 1975 to present. Figure 4b displays the share of QJE articles related to economic development describe the trait of interest as either vertical or manipulable. The methods used to classify each article are described in greater detail in Appendix Section A.

researcher.<sup>15</sup> Additional details about the methodology are provided in Appendix A.<sup>16</sup>

#### 4.4.1 Long-Run Trends in Research Style

We first investigate how the approach of development economics has evolved over the past fifty years. To do this, we scraped all articles published in the QJE and identified all articles related to development economics (see Appendix A). We focus on the QJE because, unlike other top journals, it is possible to scrape article title and abstracts going back many decades; that said, we also report statistics for American Economics Association (AEA) journals since 2000 (or the date when the journal was founded).

As we noted in the Introduction, there has been a large increase in the share of articles focusing on non-classical traits, including cultural values, norms, social organizations, traditions, customs, etc. (Figure 4a). While in most years during the 1970s there were zero articles published on these topics, by the 2000s the share had increased to roughly 20%

<sup>15</sup>Note that in the case of RCTs, in each case the researcher ultimately hopes to intervene by manipulating some characteristic of the local context, so virtually all of those are placed in the manipulable category by the LLM.

<sup>16</sup>In the prompt, we use the term “trait” rather than “determinant.” As noted in the Introduction, whether a characteristic is a determinant depends on its relationship with economic development, which is ultimately an empirical question. The term “trait” does not presuppose such a relationship and this is the term used in the prompt. This helps ensure that our classification is not influenced by the study’s empirical findings or any subjectivity when deciding which characteristics of a population or society count as “determinants.”

and by the 2010s nearly 30%. This shift was most pronounced during the 1990s and early 2000s. A similar pattern can be seen using development economics articles published in all AEA journals; while under 10% of AER articles focused on non-classical topics during the early 2000s, in recent years the number is as high as 32% and is over 20% in most years. This rise was part of the motivation behind this chapter.

Over the same time period, and despite the rising share of articles on non-classical traits, there has been a dramatic *rise* in the share of articles that have a vertical perspective. While this was only the case for 20–30% of articles in the 1970s, it has been the case for roughly 70% of articles since 2005. There has been a similar (if less pronounced) rise in the focus on manipulable traits, from roughly 60% in 1975 to over 80% today. Again, similar trends are visible in AEA journals during the more recent period, where the vertical share has increased by roughly 30 percentage points since the early 2000s and the manipulable share has increased by nearly percentage points.

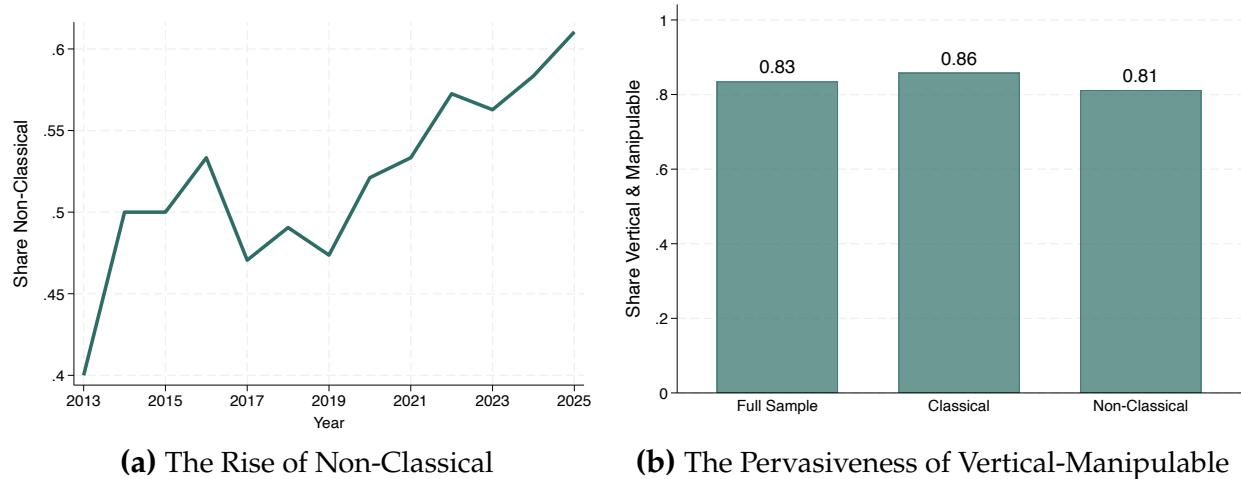
The “vertical-and-manipulable” paradigm is present both in studies focusing on classical determinants and in studies focusing on non-classical determinants, where *ex ante* this paradigm may seem less applicable. In all, 64% of QJE articles about classical topics written since 2000 fall into the vertical and manipulable category and 58% of articles about non-classical topics written since 2000 fall into the vertical and manipulable category. This is despite the fact that, as described in Section 4.1 and 4.2, there are several reasons to believe that non-classical traits are more complicated to manipulate and less likely to have a strict or clear vertical ranking.

#### 4.4.2 Randomized Control Trials in the Modern Era

We next turn to the data from RCTs. Here too, there has been a clear rise in researchers studying non-classical topics. Figure 5a plots the share of registered trials that focus on these non-classical topics over time. From 2013 to 2025, the share has increased by over 50%. That said, researchers seem to be approaching these new topics in many of the same ways. First, in nearly all studies about both classical and non-classical topics (due to the nature of the research method), the research design focuses on manipulating traits. Second, in the vast majority of studies, the author(s) describe the underlying trait that they are interested in as vertical. This is true in 83% of the full sample of studies, but the proportion is similar if we restrict attention to studies about classical (86%) or non-classical (81%) traits (Figure 5b).

This common approach to researching these topics has two possible downsides. The first possibility is that the “vertical-manipulable” paradigm has been ported to contexts in which it does not clearly apply. While there are many cases—from norms about the

**Figure 5: Randomized Control Trials**



*Notes:* Figure 5a displays the share of randomized control trials (RCTs) in the American Economics Association (AEA) RCT registry registered in each year that focus on “non-classical” topics (2013-2025). Figure 5b reports the share of RCTs in the full AEA RCT registry that are classified as studying vertical and manipulable traits. The share is calculated on the full RCT sample, the sample of RCTs focusing on classical traits, and the sample of RCTs focusing on non-classical traits, in the first, second, and third bars respectively. The methods used to classify each trial are described in greater detail in Appendix Section A.

treatment of women to rituals that cause individual harm—in which non-classical traits *are* vertically rankable, Section 4.3 described the potential adverse consequences of interventions designed to change even obviously vertical non-classical traits.

The second possibility is that existing studies focus on the subset of non-classical traits in which the paradigm does apply, i.e., settings in which there is a clear vertical rankings and scope for policy manipulation. However, this could mean that many potentially important topics are left unstudied. Moreover, as we describe in the next section, there could be alternative approaches to asking and answering questions about non-classical determinants that open the door to more effective policies.

## 5 The Trait-taking Approach

The previous sections described the potential challenges associated with interventions targeting non-classical determinants of economic development in different parts of the world. First, even when there is empirical evidence suggesting that certain non-classical traits are not conducive to development, changing them is often much more ethically complex and practically challenging to achieve (Section 4.1). Second, in many cases we have only a superficial understanding of the causes of these characteristics or how policies might

affect them, making interventions prone to complicated and unintended consequences (Section 4.3). This can also be true for interventions designed to alter classical determinants, as we described in detail in Section 3. Third, there is the possibility that we are in a reverse vertical context in which traits are (at least locally) better than what can be introduced by policy (see Section 4.2).

How to proceed in this case? Do these challenges mean that economics has little to offer or that development economists should narrow their focus to a smaller set of topics? Should the response be defeatism? We think that the answer is “not at all!” Instead, these challenges add to the sets of questions that are important to ask and answer, and make creative thinking in economics all the more valuable.

## 5.1 Trait-taking According to Hirschman

Our starting point is a useful distinction first advanced by [Hirschman \(1967\)](#) between what he called “trait-making” and “trait-taking.” Hirschman, considering the success and failure of different development projects, wrote that a trait-making project is one that “must change some aspect of the structure somewhere if it is going to be successful.” Trait-taking projects, on the other hand, stand for “situations where a project fits easily into a given and social and cultural structure and does not attempt to modify it” ([Hirschman, 1967](#), p. xi). In the former case, the policy maker achieves their development objective by changing some underlying characteristic of society. This could accurately describe a large share of existing work in development economics (see Section 4.4), and indeed there are many contexts where this approach is effective. In the latter case, the policy maker designs a plan to achieve a similar objective but in a way that takes the existing characteristics of society as given, and thinks creatively about adapting policy design to the local context.

Hirschman motivated this distinction with a discussion of the most effective way to promote the development of transportation in Nigeria. He began by identifying four key Nigerian traits which he believed were critical to take on board for this project. These were “(1) ‘tribal’ or ‘group’ tension and antagonism; (2) The vigorous use of economic power [for political and private ends] . . . (3) Widespread corruption; and (4) Rapid Nigerianization, that is, replacement of expatriate by local personnel” ([Hirschman, 1967](#), p. 140). These factors had to be dealt with one way or another—either a policy had to work despite these factors (trait-taking) or the policy had to actually change at least one of these factors (trait-making). While many of these traits have evolved during the decades since [Hirschman \(1967\)](#), and more recent research has highlighted how local characteristics like corruption can change in response to economic incentives ([Olken and Pande, 2012](#); [Pande, 2007](#)), Hirschman’s example is nevertheless instructive for conveying his main point.

To see the challenges that these traits presented, he imagined a national railway system run from Lagos, then Nigeria's capital. He argued that traits (1) and (4) would immediately create the problem of all of the groups competing with one another. One could impose a system of ethnic and regional quotas, but this would lead to large coordination challenges. On the other hand, one could hire personnel based on merit or allow top managers to do this, but this would likely lead to the railways becoming the "fief of one group or tribe," which would create resentment in the regions leading the railway to lose customers "because of hostility or discrimination" (Hirschman, 1967, p. 142). In some abstract sense, railroads may have been the most cost-effective strategy for developing Nigeria's transportation infrastructure, but it would also require altering important traits of society.

He then compared this national system of railways to an alternative possibility, building network of roads to allow trucks to transport goods. Hirschman argues that "[n]one of these difficulties affect the competing model, transport by trucks" because trucking was undertaken by large numbers of relatively small firms owned locally in all regions of the country. Thus all groups were represented and the roads were open to trucks of all regions. Trucking has other trait-taking advantages. For example, being a private sector activity it allows for private economic accumulation and the involvement of politicians. Moreover, corruption is far more debilitating for the publicly owned railways. All in all, "Trucking is here trait-taking... while railroading must be trait-making to be successful" (Hirschman, 1967, p. 142). We think that this classification of programs into trait-making and trait-taking is particularly useful because it forces a researcher to articulate the traits they are dealing with and evaluate whether they are consistent with the success of a particular policy. If they are not, then one has to take a view on which trait has to change—or re-design policy so that it is trait-taking instead of trait-making.

Consider the examples in Section 3, where cultural (i.e., non-classical) differences mediate the effect of standard policy interventions. Suppose policy makers in Indonesia wanted to increase the schooling of girls but were faced with the results from Ashraf et al. (2020) that increasing school access had no effect among families who do not practice bride price. They might then start to ask, what kinds of policies (if not school construction) can increase girls' schooling in areas without bride price? Or even, are there any complementary policies that might increase the equilibrium "value" to the family of education for girls? Assuming the key trait (i.e., marriage practices) cannot be changed by the policy maker (nor might the policy maker want to change them), at least in the short term, these trait-taking policy questions become important to answer.

Next, consider policy makers who want to increase investments in children's education in a society with age sets, as in Moscona and Seck (2024). Again, assuming local social

organization cannot be manipulated directly or that the policy maker does not want to do so (and, as we discuss below, there are many potential benefits to age-based organization), the trait-taking question becomes: what is the best way to increase child health given that inter-generational economic ties are weak? A better understanding of local context goes hand-in-hand with being able to ask the right question and ultimately being able to improve outcomes that development economists all care about.

Finally, consider policy makers who want to increase women's empowerment, but who are faced with the results described in Section 4.3 that attempts to directly alter local gender attitudes are often met with backlash and can make matters worse. What is the best way to improve the well-being of women without disrupting local equilibria in ways that can cause harm? A similar question could be applied to policy that targets other non-classical determinants, from family relationships to parenting to religious beliefs and attitude to personal aspirations.

## 5.2 Trait-taking and Development Economics

A handful of recent studies in development economics highlight the potential value of this trait-taking approach. These studies illustrate how trait-taking can inform the design and implementation of development interventions and provide a useful framework for generating and exploring new research questions.

As we discussed above, there are many examples of development interventions targeted towards improving the lives of women that ultimately backfire (Section 4.3). [Foster \(1962\)](#) describes several of these dating back to the first half of the 20th century. For example, one project in Coimbra, Portugal to expand access to laundries was strongly opposed by local women, who would be forced to give up their few opportunities to socialize outside the house if they had to give up washing clothes in the river. A community development project in Minas Gerais, Brazil, that aimed to improve kitchen technology faced similar backlash because of its effects on women's social life. Dwight Eisenhower, commenting on one such kitchen technology program, said, "The women rebelled because there was now taken away from them their only excuse for contact with their own kind, at the village well. I had been guilty of the very great error of putting into their minds and hearts the same aspirations that I had. And it simply wasn't so" ([Foster, 1962](#), p. 96) Interventions that are out of step with local social and cultural life—or fail to recognize the function of behaviors or technology in the existing social equilibrium—can be ineffective.

Similar issues are being investigated by development economists today (see [Field et al., 2026](#)). Often, interventions that seem like they should do the most good for women can backfire while others that are less dramatic—but take local characteristics of society

seriously—can have tangible benefits. To take one example, consider the interventions of [Hussam et al. \(2025\)](#), which provide employment opportunities to either men or women in Rohingya households in a refugee camp in Bangladesh. Here, the relevant background traits would include the fact that Rohingya society is very patriarchal. Could giving women employment improve gender relations via some empowerment mechanism? They find that when women work, their well-being improves but that of the husband does not. However, when husbands work, the well-being of both husband *and* wife improves, as does the health of their relationship and self-reported sense of purpose. Here, the trait-making strategy of female empowerment—which would likely include giving expanded opportunities to women—seems to be dominated by the trait-taking strategy of giving employment to men, at least in the short run. Policy interventions that are initially less intuitive—like expanding trucking in Nigeria—may ultimately be more effective.<sup>17</sup>

One area where challenges associated with promoting the well-being of women is especially salient is on the topic of female genital cutting (FGC). While convincing communities to fully abandon the practice may be tempting, examples of situations when FGC was outlawed suggest that it can lead to other adverse outcomes, including younger age of marriage, younger motherhood, higher maternal mortality, and higher rates of life-threatening abortions ([Mensch et al., 1999](#); [Rogers, 2003](#)). Moreover, individual women who refuse FGC can face ostracism and other negative consequences of deviating from a widely practiced cultural norm. Thus, even if shifting everyone away from FGC would make women as a whole better off, shifting individual women away from FGC in the current equilibrium could make them worse off (see e.g., [Chesnokova and Vaithianathan, 2010](#); [Gibson et al., 2023](#); [Shell-Duncan et al., 2011](#); [Wagner, 2015](#)).

Recent work by [Corno and La Ferrara \(2024\)](#), however, suggests that it is still possible to make progress by taking the strength of existing norms as given and working with them—a version of trait-taking. They show that one effective approach is trying to develop a “stepping stone” practice that incorporates many of the ritualistic aspects of FGC but without the violent component. This might make it possible to reduce FGC while also limiting the potential backlash or adverse consequences that might come with fully removing a coming-of-age ritual and symbol of group membership. They find that this intervention led to large and lasting reductions in FGC; exploring its longer-run impacts on mitigating backlash could be an interesting area for future work. Other studies explore the theoretical implications of this stepping stone approach ([Gulesci et al., 2025](#)) and it

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<sup>17</sup>Of course, there are exceptions. For example, [Dhar et al. \(2022\)](#) take a trait-making approach to adolescent gender attitudes in India and show that introducing structured conversations about gender equality can have long-run positive effects on support for gender equality, even two years after the intervention.

has also been applied to other contexts in which existing norms are potentially harmful to women. For example, [Ho et al. \(2024\)](#) shows using experimental evidence from West Bengal, India how flexible job opportunities that women can pursue at home can be stepping stones to other forms of work and economic opportunities.

Other work has documented that male jealousy is an important determinant of women's labor supply in parts of India and shown that altering the gender composition of workplaces can dramatically shift labor supply ([Rajah, 2025](#)). This is another example of taking local traits as given and designing policy that would be effective nonetheless. Another conclusion from recent work is that some of the most well-documented cultural barriers to women's labor supply in the U.S. and other wealthy nations do *not* seem important in patriarchal settings in developing countries. For example, while there is existing evidence of "bread-winning norms" (i.e., the idea that men should earn more than their wives) in the United States (see [Bertrand et al., 2015](#)), recent experimental work finds no evidence of this social norm across several states in India ([Rajah and Talesara, 2025](#)). This result further emphasizes the importance of learning more about the different social norms and cultural traits of societies when approaching policy design and highlights the role that experimental work can play in this process.

Another example of trait-taking comes from the context of agricultural development projects in Africa. Recent advances in crop agriculture, including drip irrigation, have made it possible to expand crop production into areas that were previously used for pastoralism. Due to the relatively high productivity of crop cultivation, organizations like the World Bank have encouraged crop cultivation in previously pastoral regions and promoted agricultural development programs in these regions. However, [McGuirk and Nunn \(2025\)](#) show that there are often large spikes in violent conflict following the introduction of a crop agriculture project in a pastoral area.<sup>18</sup> Pastoral communities see almost no benefits from these projects and conversion of land into crop agriculture limits their grazing area. Moreover, the importance of animals to social and political organization and economic exchange in pastoral groups means that they do not simply switch to cultivating crops. Trait-making is largely ineffective, especially in the short run.

These results do not imply, however, that there are no productive development interventions for pastoral regions. The authors show that non-agricultural projects have no effect on conflict in pastoral regions, and that the effect of an agricultural project on conflict is muted when paired with a pastoral project. While widespread adoption of crop agri-

<sup>18</sup>[Moscona \(2025\)](#) documents a positive relationship between World Bank aid projects and conflict using the full sample of projects in Africa, but shows that this relationship is strongly mediated by the quality of project management and design. More effectively matching project design to the local context could be one way that project management affects conflict.

culture may have the largest positive effect on productivity, this does not seem possible to achieve and attempts to do so lead to spikes in violent conflict. However, taking the traits of pastoral societies as given, development programs can still accomplish a lot while also avoiding the violent fallout from trait-making interventions.

## 6 Potential Sources of the Reverse Vertical

Perhaps the best argument for trait-taking policy making in the context of non-classical determinants of development is the fact that many non-classical traits can be reverse vertical (see Section 4.2). That is, it is possible that trait-making policies are designed under the assumption that a particular characteristic is good (bad) for economic well-being when, in reality, the opposite is true. Trait-taking policies do not face this issue since their success does not rely on altering some feature of local politics, social organization, or culture. We now turn to a discussion of the potential sources of reverse verticality and how they intersect with development research and policy making.

### 6.1 Different Outcomes are Relevant

One source of the reverse vertical is that policy makers might evaluate a determinant by a particular outcome, while those within the society may place (greater) importance on different outcomes.

**Fertility.** In much of Africa, the common belief is that there is “wealth in people” (Robinson, 2026) such that individuals evaluate their wealth more through the density and quality of their social connections than through the acquisition of material wealth. For example, in his study of rural northern Nigeria, Paul Clough argues that the clear “lived idea among the people of what economic growth is about” is simply “the multiplication of social bonds more than individual material wealth” (Clough, 2014, p. xv). Thus “accumulation” involves centrally “the accumulation of wives and children, clients and trading friends” (p. xiv) though of course accumulation of capital is a strategy for achieving these goals. Thus wealth in people extends to fertility and children (Smith, 2004).<sup>19</sup>

If the culture of a society equates people with wealth, then tautologically fewer children means lower wealth. Policies designed to reduce fertility may make people worse off based on the outcome that they themselves care about. The idea that there is “wealth in

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<sup>19</sup>Valuing children is of course not specific to Africa. For example, recent evidence from Sweden, exploiting variation in the success of assisted reproductive technologies, finds that failure to conceive causes substantial declines in the mental health of both parents, with no obvious productivity benefits (Bögl et al., 2024).

people” is consistent with numerous ethnographic studies and the most recent RCT-based evidence showing little unmet demand for contraception (Dupas et al., 2025). Since people have inherent value and so do strong vibrant family lineages, there is a moral responsibility to have lineages that are as strong as possible and having children is the way to ensure this (Caldwell and Caldwell, 1987). The responsibility stems from an “overriding need for descendants to ensure the survival of that lineage. . . an almost eternal institution, for which those now living serve as temporary caretakers” (Caldwell and Caldwell, 1990, p. 190). Consistent with this perspective, recent work by Alvarez-Aragon (2025) provides evidence that these moral foundations are an important determinant of fertility in contemporary sub-Saharan Africa.

**Redistribution Norms.** In much of the developing world, the primary alternative to saving is to give or lend to others. Thus, whether one believes that increased (personal) savings is vertical depends on how one evaluates helping oneself (savings) versus helping others. Within the economics literature, there has been a tendency to view personal savings (rather than redistributing to others) as vertical. This is most clearly illustrated by the fact that helping others has been dubbed a “kin tax” or “social tax” (e.g., Carranza et al., 2025; Jakielo and Ozier, 2016; Squires, 2024). This stands in contrast to the term used in the psychology literature, which is “prosocial spending” (Aknin et al., 2013).

The presumption that personal savings is vertical, while natural, ignores the potential benefits that arise from investing in people and the documented psychological benefits of giving to others (Dunn et al., 2008). It also fails to recognize the fact, long-established in psychology and neuroscience, that well-being is strongly influenced by social relationships, while personal achievement plays a more limited role, particularly in collectivist cultures (Kitayama et al., 2000; Park and Suh, 2018; Suh and Koo, 2007; Wang et al., 2023).

Although it would be contrary to evidence, one could argue that being less socially and financially connected to others—through reduced prosocial spending—is desirable in certain contexts. However, it is unlikely that this will be true in all contexts. In fact, the neuroscience evidence on primary versus secondary reward processing suggests that the benefits from social connection are universal across cultures—a “primary reward”—while the benefits from personal (economic) success and achievement are culturally dependent—a “secondary reward” (Eisenberger, 2012; Sescousse et al., 2013). Thus, while the benefits to prosocial spending are universal, the potential costs are not. This raises the possibility that interventions that attempt to encourage individuals to save more and reduce money given or lent to others can have complex consequences (Aggarwal et al., 2023; Dupas and Robinson, 2013; Godoy et al., 2021), especially in contexts where interpersonal relationships and social ties are particularly important.

Another reason why higher private savings might be reverse vertical stems from the importance society places on equality. While policies and academic research tends to focus on the first moment—i.e., the average—of income or well-being, for much of human history, and for many societies, it is the second moment—inequality—that matters most (e.g., [Flannery and Marcus, 2012](#), provide a large number of examples). This emphasis is natural since this is what often matters most for social cohesion and the long-run success of societies. Policies that encourage individual savings and accumulation, even if they are voluntary at the individual level, may risk undermining these social equilibria that are responsible for group-level success or cohesion. In cases where subsistence consumption is binding, the consequences of inequality can be highly detrimental; more generally, as described at length in [Flannery and Marcus \(2012\)](#), social equilibria that preserve equality can prevent the slippery slope from economic inequality to political inequality and coercion.

Even when we agree that equality is a key objective, there remain differences in which aspects of inequality one might view as being important. [Moscona and Seck \(2024\)](#) examine the consequences of social structures based on age sets relative to those where kinship relationships dominate. They find that these different structures, which generate different obligations, lead to different wealth patterns across families and age cohorts. In societies with age sets, income tends to be shared with others in the same cohort. In societies without age sets, incomes tend to be shared within a lineage and often between individuals of different ages and generations. As a consequence, ethnic groups with age sets have less (consumption) inequality across families but more inequality across age cohorts. Groups without age sets have the opposite pattern. For groups that care about how “fair” the structure of inequality is, age sets can be reverse vertical since inequality across age cohorts is more egalitarian than inequality across families. Everyone goes through all cohorts during their life and so lifetime inequality is low. However, people are in only one lineage throughout their life and so, in non-age set societies, lifetime inequality is high.

**Individual vs. Collective Property Rights.** Programs promoting individual titling are often implemented in locations with traditions of collective land use, effectively converting ownership away from family, lineage, or other forms of collective ownership to ownership that is private. However, it has been shown that collective ownership has benefits. It can reduce inequality ([Montero, 2022](#)), and provide better societal resistance to adverse shocks, and reduce conflict ([Rossignol et al., 2024](#)). It has also been shown to lead to better management of natural resources ([Baragwanath and Bayi, 2020](#); [Baragwanath et al., 2023](#)). Studying the Mapuche of Chile, [Jordán and Heilmayr \(2025\)](#) find that legally mandated individual land rights led to the dispossession of Mapuche land, and to the creation of

larger (non-Mapuche) estates that are owned by few families.

In some of the cases cited above, private ownership also had effects that can be viewed as positive. For example, [Montero \(2022\)](#) finds that private ownership results in more specialization in cash crops rather than subsistence crops. [Jordán and Heilmayr \(2025\)](#) find that the dispossession and consolidation of land is associated with more wage employment and higher levels of education. Thus, whether one views private ownership as reverse vertical in these setting depends on that outcomes one cares about most.

## 6.2 The Local Context Matters

Another source of the reverse vertical is the fact that context matters. The ordering of a particular determinant may depend on characteristics of the local context and therefore not be universal. If in some contexts, the assumed ordering is incorrect, then it can be reverse vertical.

**Kinship.** Consider the example of kinship. In the economics literature, relational social structures, typically focused around kinship, have been viewed as suboptimal for economic growth. For example, [Enke \(2019\)](#) argues that traditional “kinship tightness” is negatively correlated with contemporary per capita GDP. [Gorodnichenko and Roland \(2017\)](#) make a similar argument but for collectivist societies, which are more relational and have stronger kinship bonds, arguing that they have lower rates of innovation and lower incomes. [Ghosh et al. \(2023\)](#) show that in the United States, state-induced cousin marriage bans weakened kinship ties and increased economic mobility.

An example commonly used to illustrate how strong kinship ties might impede economic development is sub-Saharan Africa. This region has very strong kinship ties and remains economically less developed. However, while kinship might naturally appear inimical to economic growth in this context, things become much less clear once one recognizes that the same traits are also present in many developing countries that have been very successful; notably, those in East and Southeast Asia. Take the case of South Korea, one of the major economic success stories of the 20th Century. Korean culture—as much if not more strongly than in Africa—features very strong family ties, ancestor veneration, and a rigid age-based hierarchy, all characteristics of “tight kinship.”

The details of South Korea’s economic miracle make clear that economic growth was achieved through, and not in spite of, the country’s collectivist values and tight kinship structures. Almost all firms—including *chaebols*, the largest firms that became the engine of Korean economic growth—were family owned and genealogically structured. Leadership, authority, and succession were passed down through the male line in a way that reflects the

family's lineage. Firm hierarchy reproduced the hierarchy that exists within the lineage. The firm-worker relationship is perceived as being akin to the family-child relationship and workers are expected to exhibit the loyalty and obedience that children exhibit to their parents — referred to as *hyo* (효).

As explained by [Lee \(2008\)](#), "The company is frequently compared to a family, and the employees obligation is to the family patriarch." In turn, the firm has parent-like obligations to employees. As [Choi \(2004, pp. 5–6\)](#) explains, the corporation "was seen as a big family in which management played the role of the benevolent "father" whereas the employees accepted their obsequious role as "children" [...] Employees respected managers much as they would respect their own fathers. Reciprocally, managers considered their employees like family members, trying to take care of employees as much as possible."

Workers regularly engaged in behavior that did not optimize their own well-being (e.g., working long nights and Saturdays, and giving up their vacation time) but was important for the productivity of the firm. This behavior was rooted in Confucianism's filial duty and collectivist beliefs in the importance of *woori* (우리) (we-ness) and *jeong* (정) (belonging). Empirical evidence confirms the importance of these values for economic success. For example, recent studies looking across workers in Korean organizations finds that the strength of *woori* and/or *jeong* are positively associated with worker productivity ([Heo et al., 2016](#); [Kim et al., 2019](#)).

These actions also occurred in the civic sphere as well. During the 1997 Asian Financial Crisis, when Korea was experiencing a foreign reserve shortage, 3.51 million people donated 227 tons of gold, worth approximately 2 billions dollars (at the time) to the government ([The Korea Herald, 2023](#)). This was driven by norms of obligations and sacrifice to elder family members and ancestors. This episode is not unique in Korea's history. There was a similar episode in 1907-08 where gold was collected by the government in an attempt to repay debt owed to Japan.<sup>20</sup> These selfless acts were also driven by *woori* and *jeong*, concepts that to extend beyond kinship networks to society as a whole. As explained by [Kim et al. \(2020\)](#) "social relationships are considered an expansion of family relationships in Korea, [and] *jeong* experiences among family members are naturally extended to other members of the society." (p. 599).

This history of South Korea thus suggests that it may not always be the case that a more individualistic and non-kinship-based social structure is more conducive to economic development. Empirical evidence supports the argument that in Korea, tight kinship ties, and the ways in which they were mirrored by the organization of firms and the nation as

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<sup>20</sup>There are similar examples of such behavior elsewhere in the world. See, for example, our discussion of Botswana in Section [7.4.1](#).

a whole, were central to economic success.

**Electoral Democracy.** Although we have learned that electoral democracy leads to economic growth on average (Acemoglu et al., 2019), we have also learned that democracies can perform poorly in some developing country contexts (Blattman et al., 2025; Ferraz and Finan, 2026). This raises the question of whether electoral democracy is optimal in all contexts, or whether other forms of democratic governance and organization may be more appropriate in some cases.

These issues were raised by the first generation of independence leaders in Africa. In an essay published in 1961, Julius Nyerere, the leader of Tanzania, discussed what democracy meant in Africa. He defined it as: “government by discussion.” He continued, “Under the tribal system whether there was a chief or not, African society was a society of equals, and it conducted its business by discussion” (Nyerere, 1961, p. 9). This discussion ended when there was a consensus. Indeed, “This ‘talking until you agree’ is the essential of the traditional African concept of democracy” (p. 9).

Nyerere recognized that “this pure democracy... is too clumsy a way of conducting the affairs of a large modern state.” But the need to organize the “government by discussion” did not imply the need to organize an opposition group as part of the system. According to Nyerere, political competition was not a necessary part of a modern institutionalization of democracy in Africa. He recognized that “to minds molded by western parliamentary traditions and western concepts of democratic institutions, the idea of an organized opposition group has become so familiar that its absence immediately raises the cry of “Dictatorship”.” He added that, “I am not arguing that the two-party system is not democratic. I am only arguing that it is only one form that democracy happens to take in certain countries, and that it is by no means essential” (Nyerere, 1961, p. 10).

On June 8 1965, Nyerere himself addressed parliament in a speech proposing to abolish the British system and replace it with a one-party state. He emphasized that “the institutions of a democratic government must reflect the national culture” (Nyerere, 1968, p. 37). He continued, “We refuse to adopt the institutions of other countries even where they have served those countries well—because it is our conditions that have to be served by our institutions.”

What were these different conditions? Nyerere emphasizes two, in addition to the basic one that the nature of democracy in Africa was different due to the fact that decisions were reached by consensus. First, he argued that the two-party system is a reflection of the polarized class nature of Western society, of the differentiation between ‘haves’ and ‘have nots’ or between elites and the masses. But “the idea of class is something entirely foreign in Africa.” Second, he emphasized the environment created by colonialism in Africa,

leaving “countries without natural unity.” “Their boundaries enclose those artificial units carved out of Africa by grabbing Colonial Powers without any consideration of ethnic groups or geographical realities, so that these countries now include within their borders tribal groups which, until the coming of the European Powers, have never been under one government” (Nyerere, 1968, pp. 28–30). Taken together, he argued that the best institutionalization of traditional African democratic practices in the context was in terms of a one-party state.

While this argument has intuitive appeal and was at the center of debates about African post-colonial states, Nyerere’s own political incentives also could have led him to advance this set of ideas. Relatively little empirical work investigates whether forms of governance and representation are suited to different contexts. Smith (2025), exploiting a natural experiment in Pakistan that generated exogenous variation in the share of council seats that were chosen through election rather than appointment, finds that having more elected seats is associated with worse performance. Thus, at least in one setting, elected leaders might perform worse than leaders chosen through traditional means. As noted above, in many African societies local leaders are not chosen through elections but through deliberation and appointment, where reaching a consensus is a key part of the process. Electoral democracy does not always align with this aspect of traditional politics. Consistent with this, Fujiwara and Wantchekon (2013) show that efforts to increase the levels of public deliberation in elections in Southern Benin reduced reported measures of clientelism.

This raises the important question of whether efforts to introduce certain aspects of leader selection that are common in industrialized countries might lead to worse outcomes in some contexts. A potential case is policies aimed at empowering youth in a setting where political authority tend to lie with those who are older (Casey et al., 2023). While there is the clear benefit that younger generations are more educated, there is the possibility that empowering youth might be misaligned with gerontocratic norms, which are common in many developing countries, and could undermine political legitimacy or effectiveness.

A recent study in the Democratic Republic of the Congo by Lowes et al. (2025) provides evidence on this trade-off, finding that politically empowering youth can have benefits in certain contexts but adverse effects in others. In villages with age sets, there is a tradition of young men serving as a check on the power of the chief, who is typically from an older age grade. In these settings, empowering young men is more in line with the traditional political structure and, therefore efforts to do so were more successful. In villages without age sets, the opposite is true and empowering youths was not beneficial.

**Fixing a Missing Market.** There have been recent efforts aimed at addressing the fact that there is a “missing market” for child care in many developing countries. In an effort

to raise women's labor force participation, various strategies have been tried to create markets to support child care. The perception is that, in this context, the absence of a market for childcare is a vertical characteristic.

To help think through whether this is vertical or reverse vertical, it is important to recognize that through most of human history allomothering (i.e., non-maternal infant care) was common. Today, in most of the developing world, where grandmothers, aunts, older siblings, friends, or relatives look after children, allomothering remains common. In these contexts, it is possible that interventions that try to fix the missing-markets problem may not only be creating new childcare opportunities, but also moving an activity from a social gift-giving sphere to a market sphere. This is important to understand in light of recent evidence that allomothering has major benefits for the child, the mother, and the allomother (Cassar et al., 2025; Jakielo et al., 2026).

One form that allomothering takes is child fostering, where children live in a household without their biological mother or father. An estimated 40% of households in sub-Saharan Africa over the past thirty years have had their composition altered due to children living with someone other than their biological parents, even though their parents are alive (McGavock, 2023). The existing evidence finds no downsides to this form of childcare. Studies from Burkina Faso, Malawi, and Benin—comparing fostered children to biological children from the same household—find no evidence that fostering leads to worse economic outcomes (Akresh, 2004; Dohouin et al., 2025; Penglase, 2020). Looking at long-term consequences, Dohouin et al. (2025) find that, in Benin, fostered siblings experience improved labor market outcomes and end up living farther from their family members, including outside of Benin, but still maintain strong social ties to their siblings. Beyond these economic effects, the evidence from the motivational crowding-out literature (e.g., Bowles and Polania-Reyes, 2012) and the known psychological benefits of helping and being helped by others (e.g., Dunn et al., 2008) suggest that there are likely psychological and social costs to moving child care from the social sphere to the market sphere. Through these mechanisms, as well, we expect a reduction in aggregate well-being.

It is possible that efforts to create child care markets, although well-intentioned and with their own logic, are reverse vertical in certain contexts. As Dohouin et al. (2025) put it: “[While] policymakers have voiced concerns about fostering, and there have been recent efforts in several countries to prohibit or discourage the practice. . . [our] findings suggest that policy efforts aimed at restricting the practice of childhood fostering are unlikely to be welfare enhancing. . . [I]t appears that on average, both biological families and their children who are sent out benefit from the practice” (pp. 2–5).

### 6.3 The Time Period Matters

Finally, the time period might determine whether a particular trait is vertical or reverse vertical. Some features of society may be beneficial for development in certain time periods but harmful in others. A potential concern for policymakers is that certain interventions may be predicated on non-classical traits that were beneficial in the past, but may not be beneficial in the present or future.

**Kinship.** In [Enke's \(2019\)](#) analysis of kinship, he estimates the cross-country relationship between kinship tightness and economic well-being every decade since 1500. He finds that the relationship between kinship tightness and economic well-being changes significantly over time. Before 1700, societies with stronger kinship bonds were not significantly poorer (as proxied by population density). Thus, the difference emerges only after Europe's contact with the rest of the world. Whether this determinant of development is vertical or not appears to depend on the temporal setting.

**Collectivist Networks.** Another historical example of a temporal switch from the vertical to reverse vertical has been nicely documented in a series of seminal studies by [Greif \(1989, 1993, 1994\)](#) that compare the collectivist Maghribi traders to the individualist Genoese during the Medieval period. The Maghribi traders developed information sharing, social networks, and collective punishment strategies, which were beneficial for merchants, allowing them to assure the honesty of their hired traders at a lower wage and thus take advantage of more economic opportunities. At this point, these tight networks were vertical. However, the situation changed beginning in the early 11–12th centuries with the expansion of trade between Spain and Constantinople ([Greif, 1994](#)). The Maghribi tried to expand their trade networks but were limited by the dense network structure that they relied upon for information sharing which helped enforcement. The Genoese, who were unconstrained by these pre-existing networks, were better able to capitalize on the new highly profitable exchange opportunities. They could freely create new merchant-agent relationships, increasing their volume of trade, and profits.

**Fertility.** In the past half century, there have been numerous efforts by governments, policy makers, and NGOs to reduce the number of children families have. There are the well-known larger scale examples, such as China's One Child policy or India's mass sterilization programs, but also hundreds of interventions that attempt to provide information, access to contraception, and various incentives in an attempt to reduce fertility ([De Silva and Tenreyro, 2017; Zhang, 2017](#)). The presumption has been that less children is better—that is, lower fertility is a vertical trait.

However, in many parts of the world, low fertility is now one of the largest threats to sustained economic growth ([Jones, 2022](#)). Some evidence even suggests that low fertility rates are an important determinant of the current slowdown in innovation and economic growth ([Kalyani, 2024](#)). Thus, if low fertility was a vertical determinant of economic development in the past, today for much of the world it appears to be reverse vertical.

The switch from vertical to reverse vertical is illustrated most clearly when we hold the setting constant. To do so, we return to South Korea, where a large-scale national family planning program was implemented in 1962. It was among the most successful family planning programs of its time and was later touted as an exemplar of effective policy. Demographer John Stoeckel summarized its success as follows: “The achievements of this program are well documented and rank among the highest in the world. On a per-capita basis, more IUDs have been inserted than in any other program, vasectomy acceptance has been matched only in Bangladesh and certain Indian states, condom distribution is high, and oral contraceptive distribution approaches the level of the Malaysian program, which is the highest in Asia. By 1970, about 28 percent of married couples with wife aged 20-44 were practicing contraception in the government program, a higher figure than for any other country.” ([Stoeckel, 1975](#), p. 378).

In some sense, South Korea was too successful. Today, it has the lowest fertility rate of any country, with a total fertility rate (TFR) of 0.7, which is well below replacement level (approximately 2.1), and the OECD average of 1.6 ([OECD, 2024](#)). This level of fertility means that for every 200 people in the current generation, there will only be 70 children and 20 grandchildren. In Korea, the demographic collapse is widely recognized as the primary economic challenge facing the country. In June of 2024, President Yoon officially declared the problem a “demographic national emergency” ([Kim, 2024](#)).

While society is making adjustments—for example, kindergartens are being converted into nursing homes and wedding halls into funeral parlors ([Lee, 2024](#))—the government is also implementing sizable policies, such as cash subsidies, housing support, subsidized in vitro fertilization (IVF), and parental leave support, to raise fertility. These began in 2005 and today comprise nearly 3% of GDP ([OECD, 2024](#); [Yonhap, 2025](#)).

This change is not specific to South Korea. A recent survey on fertility and economic development argues that “the economic analysis of fertility has entered a new era” and that the traditional “stylized facts,” including the negative relationship between fertility and incomes, “no longer universally hold” ([Doepke et al., 2023](#), p. 151). They go on to argue that we are only beginning to address the consequences of “ultra low fertility” and the resulting population decline.

## 7 Trait-Taking and Development Successes

The previous sections have outlined a framework for categorizing development interventions and argued that standard development programs face central challenges. Chief among them is the fact that, especially in the context of non-classical determinants of development, it is often unclear which characteristics of society promote well-being and which hinder it. The previous section outlined a number of examples in which characteristics that are often presumed universally vertical are actually reverse vertical in certain contexts and time periods, or according to certain points of view.

These observations suggest that trait-taking policymaking—which does not involve taking a stand on which features of behavior are suboptimal and attempting to change them—could be useful in many contexts. While this argument might make sense in theory, are there examples of trait-taking policymaking driving economic development?

In this section, we take a step back and think about what development strategies have been successful over the past 75 years. We find that many of the development successes were a direct result of policies and programs that look a lot like successful trait-taking. While far from being the only development triumphs, these examples highlight the potential importance of the trait-taking approach to development economics and development policymaking, across continents, sectors, and time periods.

### 7.1 Trait-taking in Historical Perspective

Before turning to examples from recent decades, we first note that Hirschman's terminology is useful for thinking about one of the most profound essays in economic history, [Gerschenkron's \(1962\) \*Economic Backwardness in Historical Perspective\*](#). Gerschenkron pointed out that there was no one way to industrialize and that the exact strategy that worked depended on each country's initial conditions. But no conditions were necessary—there were always substitutes. For example, Britain had industrialized first and slowly. To catch up, follower countries required substantial initial investments which were not needed in Britain. In Germany, the banks took on the role of raising capital and became involved in long-run relationships with firms (sitting on company boards, etc.). In Russia, which was more "backward" (in the terminology of Gerschenkron), there were no banks so the state had to substitute for them and drive capital accumulation.

Using Hirschman's language, Gerschenkron was pointing out that the industrialization strategy that each country used depended on its traits. He took these underlying traits as given: Germany and Russia did not try to change their traits to be like those of Britain. They simply used different strategies that relied only on traits that did exist. While all three

countries industrialized, their different traits meant that different approaches to successful industrialization were required.

## 7.2 Agricultural Productivity Growth and The Green Revolution

There is widespread interest in understanding global disparities in agricultural productivity and technology adoption. A large number of studies describe interventions designed to reduce various barriers to technology use and productivity growth in developing countries (i.e., trait-making). However, these studies often fail to meaningfully shift technology use, and together they cannot account for the low levels of technology adoption in developing countries ([Suri and Udry, 2022](#)) or vast cross-country productivity gaps, which are larger even than those in manufacturing ([Herrendorf et al., 2022](#)).

Does this mean that there is limited scope for policy interventions to increase agricultural productivity in developing countries? Recent history suggests that the answer is no. In fact, the most dramatic change to global agriculture during the 20th century was the Green Revolution, a direct result of concerted policymaking. The Green Revolution was a period that began during the 1960s when there was a global effort to invest in the development of high-yielding crop varieties (HYVs) tailored to tropical environments. That is, rather than intervene to promote the adoption of existing technology, a key goal of the Green Revolution was developing technology that matched the conditions of much of the developing world (i.e., trait-taking).<sup>21</sup>

Responding to widespread fear of famine and acute food insecurity in tropical regions, large philanthropic organizations backed crop breeding efforts in a series of international agricultural research centers (IARCs), each tasked with generating productive varieties of specific staple crops. For example, the International Rice Research Institute (IRRI) in the Philippines bred new rice varieties and the International Maize and Wheat Improvement Center (CIMMYT) in Mexico—where the “Father of the Green Revolution” and future Nobel Peace Prize winner Norman Borlaug was based—bred wheat and maize varieties.

The Green Revolution led to a near tripling of global staple crop production, despite land devoted to agriculture increasing by only 30% ([Pingali, 2012](#)). The food crisis that policymakers feared never materialized. In countries like the Philippines, Bangladesh, Indonesia, and India, adoption rates of Green Revolution HYVs exceeded 60% by the

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<sup>21</sup>While beyond the scope of this chapter, research in economic history on the rise of agricultural productivity in the U.S. also highlights the role of shifting production processes and technology to match local conditions. [Olmstead and Rhode \(2008b\)](#) highlight the importance of biological technology that made it possible for agriculture to expand across different climatic and ecological conditions (see also [Olmstead and Rhode, 2008a](#)). [Kantor and Whalley \(2019\)](#) highlight the importance of federal experiment stations, which developed and tested agricultural technologies that were adapted to different parts of the country.

1990s and reached as high as 90% (Evenson and Gollin, 2003b). Much of this adoption can be explained by working directly with local farmers and further tailoring even the new HYVs to the local environment. MS Swaminathan, an Indian geneticist and plant breeder who was central to the Green Revolution in India, describes learning about local soil moisture, seed prices, and pests directly from farmers and developing a “farmer-first” approach to crop breeding. When India began to import HYV wheat from CIMMYT in Mexico, Swaminathan adapted them to Indian ecological conditions, including local pest and disease populations, and developed golden short-grain wheat (instead of the Mexican red) “to suit leavened Indian breads like naans and rotis” (Tilak, 2025). Shifting the characteristics of technology to match local traits was essential.<sup>22</sup>

There are many countries where the Green Revolution had little effect on productivity (Evenson and Gollin, 2003a). However, these exceptions prove the rule and only further highlight the importance of trait-taking to the success of the Green Revolution. In Section 3, we described the damage caused by the Green Revolution in Bali, due to the fact that new planting cycle recommendations were ill-adapted to curb pest outbreaks that devastated rice production (Lansing, 2009). The trait-making approach employed in Bali—in which technocrats forced local farmers to drop traditional rice cultivation practices that involved strict coordination across fields—led to widespread crop failures. More generally, the Green Revolution’s high yielding crop varieties were systematically less likely to be adopted in countries that were more ecologically dissimilar to the specific locations—like the IRRI in the Philippines and CIMMYT in Mexico—where those varieties were developed (Moscona and Sastry, 2025). In parts of the world that were most ecologically dissimilar to Green Revolution breeding locations, agricultural productivity remained stagnant. One example is Brazil, where Green Revolution crop varieties were poorly adapted to the combination of highly acidic soils and dependence on rain-fed agriculture (Cabral et al., 2022; Vilaça de Vasconcelos et al., 2022).

Despite the failure of the Green Revolution in Brazil, it had one of the fastest growing agricultural economies during subsequent decades, transitioning from a long period of stagnant agricultural productivity to one of rapid productivity growth. Today, Brazil is one of the world’s largest agricultural exporters. What led to this transformation? Here too, the answer has a lot to do with trait-taking. In 1973, the Brazilian government founded the Brazilian Agricultural Research Corporation (Embrapa), a public research institution designed to develop new technologies that were suited to Brazil’s specific ecological

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<sup>22</sup>Berrutti and Ruzzante (Berrutti and Ruzzante) show the importance of this local tailoring of agricultural technology in India in modern times. They focus on the local adaptations that are required for the effectiveness of genetically modified cotton varieties.

and economic conditions. In the words of Embrapa's founder, Eliseu Alves, “[T]he major problem in Brazilian agriculture was not a lack of potential. The potential existed, but there was no science capable of generating technology suited to what we needed” ([Alves and Duarte, 2018](#), p. 83). Embrapa set up research labs spread throughout the country with the goal of learning about conditions on the ground and designing technology to match them, rather than promoting the adoption of foreign technology and techniques.

Recent research suggests that this approach worked. [Akerman et al. \(2025\)](#) estimate that Embrapa alone can explain nearly half of Brazil's agricultural productivity growth since 1970. Moreover, it was a highly cost-effective policy initiative: combining estimates of its returns with detailed data on investment costs, the authors estimate a benefit-cost ratio of seventeen. The broad scope of Embrapa's research explains a large share of the benefits. Counterfactual estimates suggest that if the Brazilian government had invested the same amount of resources in a single research hub—and therefore been less able to develop technology that was well-matched to the varying conditions across regions—the benefits would have been much smaller.

The success of Embrapa is exemplified by its effect on the Cerrado region, a tropical savannah stretching across central Brazil with highly acidic soils where Green Revolution varieties were dead on arrival. Before the 1970s, the Cerrado was mainly used for low-productivity cattle ranching. In the words of Alves, this was where an institution like Embrapa and its trait-taking approach were most needed: “The region lacked any effective agricultural research services. [I]t was necessary to gain a better understanding of the climate, soils, water availability, flora, land tenure, and, ultimately, an entire ecosystem” ([Cabral, 2005](#)). During the subsequent decades, Embrapa developed agricultural liming techniques to neutralize the acidic soil and hundreds of “tropicalized” soybean varieties that were productive near the equator; today, the Cerrado is one of the most productive regions in Brazil, responsible for over 40% of Brazil's soy output.

The rise of the Cerrado was an impressive feat, even to the early proponents of the Green Revolution. As Norman Borlaug put it, “When I was working in India and Pakistan and the Near East countries in the 1960s and 1970s, nobody thought these soils were ever going to be productive. Embrapa was able to put all the pieces together” ([Rohter, 2007](#)). More recently, China has pursued a similar approach in its “science and technology backyards” (STB) program, a series of spread-out researchers hubs that both build local expertise and collaborate extensively with farmers in order to learn from their needs and know-how ([Zhang et al., 2019](#)). Recent evidence suggests that this approach substantially and sustainably raises local technology adoption and crop yields ([An et al., 2024](#); [Cui et al., 2018](#)), and similar programs are now being explored in other parts of the world. This is

trait-taking policy making in action, and it is being met with major success.<sup>23</sup>

### 7.3 The Rise of East Asia

Perhaps the most striking development experience of the post-Second World War period has been the rise of East Asia. The economic growth of Japan was already becoming apparent in the 1960s and this then spread to the “Four Little Dragons” (Vogel, 1993) in the 1970s and eventually to China. In this section we briefly argue that salient aspects of this growth process were made possible by a strategy of trait-taking.

#### 7.3.1 South Korea

We have already shown that the South Korean development experience was trait-taking in critical ways. This is particularly evident in the role played by family-owned firms. The conventional wisdom in economics is that such firms have inferior management practices and lower productivity (Bloom and van Reenan, 2010; Bloom et al., 2013). Yet in Korea, they spearheaded one of the most dramatic economic transformations in world history. In Section 6.2, we emphasized how Confucianism was critical to the internal organization of the *chaebols* and how it led business elites to internalize the collective interest. Here, we describe how it accounts for other aspects of the effectiveness of Korean policy.

Many scholars emphasize the extent of the informal relationships between the government and the *chaebols* and that these relationships—while seemingly inimical to economic development—were central to productivity growth in Korea (see Heldring and Robinson, 2026). Lew notes how “one of the notable characteristics of Korean society is the intricately webbed nexus among state/nonstate and official/non-official sectors” (Lew, 2013, p. 14). Following Bell and Hahm (2004), Lew calls these “affective networks” and describes how qualitative evidence points to the effectiveness of these networks in implementing policy. One study of the *chaebols* notes that “[i]nformally, considerable pressure was placed on industries, including occasional visits from the president, to comply with governmental directives and meeting or exceeding production targets” (Steers et al., 1989, p. 27). Amsden explains how “so much of Korean industrialization has involved rewarding the same set of government friends with favors for expansion. . . . repeated support was exchanged, de facto, for good performance” (Amsden, 1989, p. 16). Lew argues that “the most important

<sup>23</sup>The potential importance of innovation that takes local context into account (i.e., trait-taking technology development) is not restricted to agriculture. Recent literature also highlights its importance in medicine (Hotez, 2021; Kremer and Glennerster, 2004; Kremer et al., 2020), green technology and climate adaptation (Dugoua and Moscona, 2025), and the world of high-tech start-ups (Lerner et al., 2024). Acemoglu et al. (2026), in this Handbook, describe the role of technology in economic development more broadly, with a discussion of the impact of inappropriate technology.

element" of the interaction between the state and *chaebols* was "the norm of generalized reciprocity" (Lew, 2013, p. 123). As a result, "As recipients of state favoritism, *chaebols* were obligated to pay back to the country through increased exports" (Lew, 2013, p. 132).

Perhaps no better example of the extent of informality exists than the monthly export promotion meeting, chaired by President Park, which involved extensive negotiation with the owners of the *chaebols* and interventions that were "highly discretionary made on a company-by-company basis" (Jones and Sakong, 1980, p.132). In another interaction, recorded by Chung Ju-yung, the founder of Hyundai, occurred after Park decided that Korea needed a shipbuilding industry and Chung was the person to start it. Chung recalled telling Park "It just can't be done, sir." He continued, "Upon hearing my words, the president turned away from me and only looked to Vice-Prime Minister Kim as he said, 'Reject all of Chairman Chung's business proposals going forward. Make sure the government never does any business with him again!'" (Chung, 2019, p. 131). Chung got the shipyard built.

Implementing policy like this ought to have led to rent-seeking, patronage and corruption. And yet, growth and industrialization in South Korea took off. There certainly was some corruption, but the argument of Heldring and Robinson (2026) is that this style of policymaking was highly trait-taking in the Korean cultural context (see Section 6.2 for additional detail and see Kang (2002) for a comparison with the Philippines). It might well lead to corruption in alternative circumstances, but in Korea it meshed with the Confucian logic of society and strong importance of family ties was mirrored by industrial forms.

### 7.3.2 The Andon Cord in Japan

One of the remarkable aspects of the economic rise of Japan was its system of industrial relations. This featured lifetime employment contracts and many mechanisms to encourage investments in specific human capital (Hashimoto, 1979). These unique features of industrial organization were apparent both within the firm and in the structure of labor markets (Carmichael and MacLeod, 1993).

Though there are different ways to interpret Japan's specific structure of industrial relations, a central one is to place them in their cultural and historical context (Dore, 1973, 1986). Even when the differences in Japanese industrial relations and management practices became evident and understood, companies in the U.S. were unable to adopt them. As Helper and Henderson (2014) point out, this was because they were not adapted to the U.S. context. A central examples of this was the use of the andon cord by Toyota, which allowed any worker to stop the entire production line to point out something going wrong or make a concrete suggestion for an improvement. Even after U.S. companies

like General Motors understood how this system worked and saw its benefits in Japanese firms, they were unable to adopt it. This was because of the very different nature of labor relations and the relative lack of trust between the employers and employees.

General Motors is still a profitable global business so the difference in the determinants which led to the Japanese model in one case and the U.S. in another are really horizontal differences. The key point here is that Japanese firms developed a trait-taking model of industrial relations and firm organization that would not have functioned in the United States.<sup>24</sup>

### 7.3.3 Stepping Stones in China

In characterizing the process of economic reform in China, Deng Xiaoping commented that he “groped for the stepping stones as he crossed the river” (Vogel, 2013, p. 2). This is a perfect image of trait-taking, which is evident in many domains of the Chinese transition (see Qian, 2017, for an overview). Let us focus on one: the emergence of Township Village Enterprises (TVEs) in the 1980s, which were at the forefront of China’s manufacturing boom and “played [a] catalytic role in transforming the Chinese economy from a command economy to a market economy” (Naughton, 2007, p. 271). Employment in TVEs increased from 28 million in 1978 to 135 million in 1996 (p. 274). TVEs were collectively owned by local communities and thus “ideologically safe” in an era where a private firm in China could not employ more than 8 people (p. 274). Moreover, “Local governments became enthusiastic partisans of TVE development” (p. 277).

Why did industrialization in China after the reforms of Deng take this particular organizational form? There are two main arguments. Weitzman and Xu (1994) propose that it was an organizational form that was adapted to Chinese collectivist culture. Chang and Wang (1994) and Che and Qian (1998a,b) instead argue that it was a response to the institutional problems that dominated China in the 1980s; for example, there was no corporate law and no independent judiciary. The advantage of TVEs was that by sharing rents, they gave local politicians an incentive to protect property rights and they could also guarantee debts so that capital was available. Industry flourished in the countryside and townships, “far away from the glare of official scrutiny,” (Dikköter, 2024, p. 73) so that the TVEs did not have to compete with state-owned enterprises.

There is a debate about whether TVEs were a spontaneous response to reform (Dikköter, 2024; Nee and Opper, 2007) or whether they were intentionally designed by the Communist Party (Qian, 2017). Either way, they were clearly a trait-taking approach to industrial-

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<sup>24</sup>The literature on Japanese-British and U.S. firms anticipates the literature on the “varieties” of capitalism (Hall and Soskice, 2001).

ization in China.

## 7.4 Growth Successes in Africa

### 7.4.1 Botswana

Botswana has been by far the most successful economy in Africa since independence in 1966 (Robinson, 2013). At a proximate level, it has achieved this by exploiting abundant diamond resources. Diamonds today represent 80% of exports, one third of government revenues and one quarter of GDP. Yet such natural resource “dependence” is hardly exceptional in Africa. What is exceptional is the way these resources have been used to invest in public goods and infrastructure. There is broad consensus about why this has happened—unlike elsewhere in Africa, Botswana has had good governance. Since independence, corruption has been very low and state institutions have been highly effective. There has been political stability and there has never been a coup or a civil war in the country (Acemoglu et al., 2003; Leith, 2005; Lewis and Harvey, 1990).

How good governance was achieved is more controversial. Still, the literature has converged on one main argument: Botswana’s first generation of political elites—particularly Seretse Khama and Quett Masire, the founders of the Botswana Democratic Party (BDP)—were able to adapt the traditional institutions of the Tswana polities making up the territory of Botswana to the modern nation state. In doing so they were able to project historical forms of governance and accountability onto the nation state (Schapera, 1938, 1940).

Perhaps the most visceral example of the consequent legitimacy of the post-colonial state arose in 1976. After independence Botswana collaborated with Lesotho and Eswatini (then Swaziland) to build a joint university. The main campus was in Lesotho, which then abruptly exited the agreement. Botswana and Eswatini had to go it alone. The Botswana government responded with the “one man, one beast” fundraising campaign, or the Botswana University Campus Appeal (BUCA). Led by President Seretse Khama, the campaign was designed to raise funds for the creation of a Botswana Campus for the University of Botswana. People responded, making contributions of cash, cattle, grain and even eggs. Quickly one million South African rand, about 1.3 million U.S. dollars, was raised and in 1982, the University of Botswana emerged. The appeal tapped into the deep Tswana cultural norm of *Ipelegeng*—“rely on yourself.” The Tswana relied on themselves and built a university (see Grant, 2013, for the details).

At the heart of Tswana political system was an assembly called the *kgotla*. When the new capital was built in the green field site of Gaborone, just before independence, the BDP made sure that new *kgotlas* were constructed there. Peter Fawcett, the British colonial

official who was the counterpart to the BDP elites in the transition to independence recalled later that “[a]fter the transfer of power in 1965 the *kgotla* eased the transition from colonial government to parliamentary democracy by offering a forum of traditional legitimacy to ministers, MPs and civil servants to explain their policies and test public opinion on new proposals. Extensive use was made of this forum by national leaders” ([Fawcus and Tilbury, 2000](#), p. 170). This extensive use has been documented by anthropologists, including [Kuper \(1970\)](#), and subsequently [Gulbrandsen \(2012\)](#), who noted:

When I lived in a Bangwaketse village during the 1970s and 1980s one of the most salient aspects of political life was the recurrent arrival of cabinet ministers, members of Parliament, district councilors, and government bureaucrats [...] to deliver addresses in the village *kgotla* ([Gulbrandsen, 2012](#), p. 238).

Masire, who went on to be president after the death of Seretse Khama, himself observed, “Our tradition in Botswana, based on the *kgotla*, had been one of open debate [...] The arrival of Western politics just provided different names or contexts to the way we had carried out our differences traditionally” ([Masire, 2012](#), p. 121).

Botswana achieved good governance by adapting traditional practices to a modern nation state. This is a clear example of trait-taking. But it is deeper than this. [Comaroff and Comaroff \(2011\)](#) point out that the BDP, which held power continuously for 59 years until 2025, was a de facto one-party state where good governance did not hinge on how competitive national elections were, and where decisions even in the *kgotla* were not made via elections since nobody votes. Gulbrandsen sums this up brilliantly from his own ethnographic work:

The main point is that in contrast to a Western-style democracy, in which the centrality of competing and conflicting interests and the consequent political stratagems and confrontations are taken for granted, there is no notion here of a political field in which such interests can be resolved [...] by a majority vote. Western systems are based on the assumption that politics is a matter of reaching a collective decision in a situation of conflict and often in a highly individuated societal context. The political system of the *kgotla* is based on the opposite assumption: that there exists one particular solution to any issue, the one that benefits the common good and not any particular group representing a majority opinion ([Gulbrandsen, 2012](#), p. 235).

The *kgotla* then is based on deliberation and the principle that decisions should be made by consensus. This is not to say that trait-making did not happen in Botswana. In a

speech in Lobatse in 1969, Seretse Khama noted: “Development means change not only in our way of life, but in the attitudes and values, the ways of thinking which underlie that way of life. If people are to be persuaded to change their ways, they must understand why they are being asked to change” ([Khama, 1980](#), p. 298). The point is that, to the extent that it happened, the trait-making was done firmly in the local context and controlled by the Tswana peoples themselves.

#### 7.4.2 Rwanda

While Botswana has been the big African success story over the entire independence period, also notable has been the economic trajectory of Rwanda since the 1994 Genocide. In the past 30 years Rwanda has become the most celebrated development success in the continent with an average rate of GDP growth of 8% a year. This has come in the context of a rebuilding of the society and a remarkable provision of public goods. A striking recent example is the rollout of electrification. In 2005, a mere 4% of Rwandans had access to the electricity grid. In 2023 this had increased to 54% with another 21% having access to off grid sources of off grid electricity. Today, 100 % of health centers have access to electricity, as do 84% of schools ([World Bank, 2024](#)).

How has Rwanda accomplished this? On the face of it, it is a simple case of state capacity. Rwanda has a long history of state capacity, as [Heldring \(2021\)](#) describes. Yet what is interesting in this case is how this capacity is manifested. For example, the rollout of electrification was driven by Rwanda Energy Group (REG), which has two subsidiaries: Electricity Utility Corporation Limited for utility operations, and Energy Development Corporation Limited (EDCL). The World Bank notes, “For accountability and performance monitoring, REG and EDCL management sign annual performance contracts (*imihigo*), committing to achieving the annual electrification targets.”

*Imihigo* is one of Rwanda’s “home grown initiatives” which have been at the heart of the development success (see [Gatwa and Mbonyinkebe, 2019](#); [Sabbi and Ndikubwimana, 2024](#)). In 2006, at a meeting of mayors, President Paul Kagame intervened in a discussion of promises and pointed out that in Rwandan culture, making bold claims about accomplishments was no small matter. He referred to the Rwandan traditional practice of *imihigo*, a pre-colonial tradition whereby warriors or leaders would publicly vow to accomplish certain deeds. Failure to fulfill these promises would result in shame and embarrassment. Kagame challenged the mayors to come up with *imihigo* for their districts that he would then follow up on later in the mayors’ terms. He assembled a team from the Ministry of Local Administration to consider ways to integrate the practice of *imihigo* into a comprehensive performance management strategy initially for all district mayors.

*Imihigo* now cascades down through society and has turned into a vast policy implementation strategy. Starting at the bottom, villages formulate three development priorities. These are aggregated at the next level up, the cell, which go to the next level, the sector, where they meet the priorities of the central government filtering down the system in the opposite direction. Out of these emerge policy choices and commitments, which are formalized into *imihigo* contracts, and these contracts are then evaluated by the National Institute of Statistics (NIS).

Using data from the NIS, [Heldring et al. \(2025\)](#) show that successful implementation of *imihigo* predicts public goods and development outcomes (and not just with respect to electricity, see also [Chemouni, 2018](#)). They argue that while it is true that Rwanda had a history of state centralization, it was a very non-Western sort of state, which lacked a fiscal system and other features that are often considered important components of state capacity. [Vansina \(2004, p. 97\)](#) characterized its structure in the following way:

There was no central administration in the country except for the ritualists. The administrative structure of the realm was formed only by the conscription of the whole population into armies, on the one hand, and by the chains of patron-client relations whose supreme patron was the king, on the other.

In a sense, *imihigo* mobilizes these traditional patron clients chains and utilizes them to provide incentives and public goods. These have spread out of *imihigo* into other areas. *Girinka*, for example, provides a cow to each poor family. This obviously has nutritional objectives but it also hinges on the central cultural importance of cows in Rwandan society. Another initiative is *Abunzi*, whereby community mediators resolve local disputes. Indeed, the whole transitional justice system that Rwanda created after the genocide, the so-called *Gachaca* courts, were based on this process ([Ingelaere, 2018](#)).

Our key point is that the developmental success in Rwanda has been based on trait-taking. They have leveraged the traits of Rwandan society and turned them into effective strategies to deliver public goods and economic growth. Of course, as in Botswana, there was trait-making too; [Kamuzinzi \(2019, p. 194\)](#) writes, “Since the current *imihigo* scheme is operating in a modern state... it has been progressively amended to adapt it to the functioning of bureaucratic systems.” But also as in the case of Botswana, this has been done within the context of local institutions and traditional forms of governance.

## 8 Conclusion

In this chapter, we have taken a step back to think conceptually about both classical and non-classical determinants of development—not just inputs into health and education, or

the nature or property rights, but also culture, social organization, beliefs, norms, and traditions—and the justification for and effectiveness of policy interventions.

We began by introducing a framework for approaching policy intervention, and argued that there are two key challenges for policy design that become especially important when interventions target non-classical determinants. First, in many cases these determinants are only partly (at best) manipulable through policy intervention, and policies designed to change them are often ineffective or may cause substantial backlash. We outlined a number of cases in which the effects of standard policy interventions are mediated by non-classical differences across societies, as well as examples of policies that were designed to promote development by directly changing these non-classical traits either failing to do so or leading to worse outcomes.

Second, and more importantly, there is the real possibility a trait that appears to be suboptimal from the perspective of the economist or policymaker is actually optimal in the local context—a situation that we refer to as a “reverse vertical” ranking of determinants. We described many examples of features of society that appear different from conditions in high-income countries but are nevertheless well-matched to the local context, time period, or preferences of the society in question.

Given these challenges, how should development policymaking proceed? Building on [Hirschman \(1967\)](#), we argue that a lot can be learned from the distinction between trait-taking and trait-making approaches to policy design. Trait-making policies require changing some local trait in order to achieve the desired outcome. This accurately characterizes many existing policy interventions, including those studied by development economists. This approach introduces many potential pitfalls, however, including the possibility that policymakers inadvertently change traits that are reverse vertical. This is important to take into account, given our limited understanding of the impact of non-classical features of society, how they interact, and how they are sustained in equilibrium.

Trait-taking policies, on the other hand, attempt to achieve similar goals while taking the existing traits of society as given. This requires thinking creatively about adapting interventions to the local context, or even designing entirely new policies that would not have been effective in high-income countries but nevertheless work well elsewhere in the world. There are already a number of studies in development economics that highlight the potential value of a trait-taking approach to development interventions. Moreover, as we argue in the final section of the paper, many of the most notable development successes of the last several decades—from rapid agricultural productivity growth in tropical regions to growth successes in Asia and Africa—have trait-taking at their core. Integrating trait-taking more systematically into development economics and development policy design

seems like a promising area for future study.

Development economists are well-positioned to do this challenging but important work. In his Nobel Lecture, Michael Kremer outlined four benefits of field experiments beyond their ability to isolate causal effects. The first benefit that he lists is the fact that “because they require time in the field, experiments provide economists a richer sense of context than many would otherwise obtain” (Kremer, 2020, p. 1975). This sense of context is an important part of even identifying the traits of society that interact with policy interventions, and ultimately, of developing trait-taking approaches to development (see also the discussion in Naritomi et al., 2020; Robinson, 2025).

Especially given the increasing scarcity and opportunity cost of development funding, it is even more important to develop a deeper understanding of variation in world views, moral frameworks, family ties, political structure, and preference ordering over outcomes, and to use this information to design thoughtful interventions. This argument is very much in line with recent calls to implement aid projects in simpler and smarter ways, without the myriad policy components motivated by the desires and preferences of interest groups in rich countries (Glennerster and Haria, 2025).

In many instances, the “solutions” to problems may turn out to be things that were not even on our radar to start out with, and the “problems” that we identify in the first place may turn out not to be problems or deficiencies at all once we have a more complete understanding of the local population and the local context. As Oriana Bandiera more emphatically put it: “[I]n many cases, we [foreign researchers] are not even conscious that there is a possibility that things work differently than they do in the country we live” (Goldstein and Menéndez, 2025). This seems important to correct.

Lastly, it would be hypocritical of us to assert that we know the answers to the questions raised in this chapter. However, we do feel that these are questions we should be asking ourselves and discussing in our discipline. We hope that this chapter is the beginning of a conversation on these important issues within our field.

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## A Appendix: Article and Trial Classification

We used an LLM-based classification approach in order to identify characteristics of each article or trial. We implement a large language model (LLM)-based classification procedure using OpenAI's most recent GPT accessible via its API service<sup>25</sup> to extract several conceptual attributes from the description of each study. Using each study's title and abstract together as an input, we apply a sequence of prompts designed to identify (i) whether the trait is typically classified as a classical or non-classical determinant of economic outcomes (ii) whether the primary trait discussed in the study is presented by the researcher as vertical or horizontal, and (iii) whether the trait is typically considered to be manipulable or non-manipulable. For the RCT sample we further investigate whether or not the goal of the research was to manipulate that trait.

We use the following prompts to classify each study:

### 1. Classical vs. Non-Classical

SYSTEM\_CONTEXT = "'''

You are an expert in development economics. Your task is to classify descriptions of academic studies into whether the main trait discussed is a classical or non-classical fundamental trait, using the rules below. Be decisive but cautious.

Classify the input text into two possible categories:

- Classical fundamental trait
- Non-classical fundamental trait

Key definitions

- Trait: an attribute of the local environment that the study discusses or measures (e.g., skills, behaviors, attitudes, preferences, demographics).
- Classical trait (Classical\_key\_trait: 1): Traits which classical (and neoclassical) theory consider as determining long-term economic outcomes (e.g., preferences, technology, natural resource endowments, institutions, comparative advantage, frictions etc.).
- Non-classical trait (Classical\_key\_trait: 0): Traits which have recently been considered as determining long-term economic outcomes (e.g., behavioral factors and beliefs, culture, social factors, coordination failures etc.).

Rules:

- Output a dummy variable named "Classical\_key\_trait": 1 if classified as classical, else 0.
- If the text mentions multiple traits, base the classification on the primary trait.

---

<sup>25</sup>As of 13 November 2025, when this analysis was conducted, the latest gpt was gpt-5-2025-08-07.

```
Output format
Return a single JSON object exactly with:
{
  "Classical_key_trait": "1 | 0"
}
Do not add extra keys. Do not include markdown.
"""
```

```
USER_PROMPT_TEMPLATE = """Classify the following text:
```

```
Text:
---
{chunk}
---
"""
```

## 2. Vertical vs. Horizontal

```
SYSTEM_CONTEXT = """
```

You are an expert in development economics. Your task is to classify descriptions of academic studies into whether the main trait discussed is presented as vertical or horizontal, using the rules below.

Be decisive but cautious.

Classify the input text into two possible categories:

- Vertical trait
- Horizontal trait

Key definitions

- Trait: an attribute of the local environment that the study discusses or measures (e.g., skills, behaviors, attitudes, preferences, demographics).
- Vertical trait (Vertical\_key\_trait\_author\_stance: 1): A trait that the author presents as better to have.
- Horizontal trait (Vertical\_key\_trait\_author\_stance: 0): A trait that the author does not judge hierarchically.

Rules:

- Output a dummy variable named "Vertical\_key\_trait\_author\_stance": 1 if classified as vertical, else 0.
- If the text mentions multiple traits, base the classification on the primary trait.

Output format

Return a single JSON object exactly with:

```
{  
  "Vertical_key_trait_author_stance": "1 | 0"  
}  
Do not add extra keys. Do not include markdown.  
"""
```

USER\_PROMPT\_TEMPLATE = """Classify the following text:

Text:

---

{chunk}

---

"""

### 3. Manipulable vs. Non-Manipulable

SYSTEM\_CONTEXT = """

You are an expert in development economics. Your task is to classify descriptions of academic studies into whether the main trait discussed is manipulable or non-manipulable, using the rules below. Be decisive but cautious.

Classify the input text into two possible categories:

- Manipulable trait
- Non-manipulable trait

Key definitions

- Trait: an attribute of the local environment that the study discusses or measures (e.g., skills, behaviors, attitudes, preferences, demographics).
- Manipulable trait (Manipulable\_key\_trait: 1): A trait that can plausibly be changed by an intervention (e.g., financial literacy, hygiene practices).
- Non-manipulable trait (Manipulable\_key\_trait: 0): A trait that is effectively fixed and not alterable by interventions (e.g., ecology, deep-rooted aspects of culture (caste system in India for example)).

Rules:

- Output a dummy variable named "Manipulable\_key\_trait": 1 if classified as manipulable, else 0.
- If the text mentions multiple traits, base the classification on the primary trait.

Output format

Return a single JSON object exactly with:

{

```

    "Manipulable_key_trait": "1 | 0"
}
Do not add extra keys. Do not include markdown.
"""

USER_PROMPT_TEMPLATE = """Classify the following text:

Text:
---
{chunk}
---
"""

```

## A.1 Sample and Text Pre-Processing

### A.1.1 Randomized Control Trials

This section describes the workflow used to construct the final processed Randomized Controlled Trials (RCT) dataset used in the analysis. The [American Economic Association RCT Registry \(2025\)](#) was extracted for all available study-level information, including title, abstract, publication outlet, registration date, the principal investigators (PIs) and their affiliations, the study country, and all assigned keywords. To restrict the sample to RCTs relevant to development policy, we exclude studies conducted in high-income countries according to the [United Nations Industrial Development Organization \(2025\)](#) development classification. We further removed RCTs with insufficient information (e.g., without a study abstract due to disclosure issues); RCTs that were only about decision theory or psychology (i.e., certain lab experiments) but not related to development; and RCTs that were explicitly about artificial intelligence. This makes it possible to focus on studies that are related to development economics and with sufficient information for classification. In the end, we are left with 2,379 unique studies.

### A.1.2 Quarterly Journal of Economics

We scraped metadata for all articles published in the [Oxford University Press for the Harvard University Department of Economics \(nd\)](#) since the journal's creation until the present. For each article, we collected the date of publication, names of the authors, title, DOI, citation, PDF download link (available pre-2011), abstract and the JEL codes it is listed under (available from 2011 onwards).

The full dataset (i.e., for years before 2011) does not include any additional variables that would enable us to filter for studies relevant to development economics (e.g., JEL codes). Accordingly, we rely on an LLM-based approach to classify whether each study is relevant to development economics. The classifier uses the prompt shown below, where the input consists of the study's title and abstract:

```

SYSTEM_CONTEXT = """
You are an expert in international and development economics. Your task

```

is to classify descriptions of academic studies according to whether they concern any part of the world outside the United States and Europe and/or address economic development or economic growth, using the rules below. Be decisive but cautious.

Classify the input text into two possible categories:

- Relevant
- Not relevant

Key definitions

- Relevant (Relevant\_study: 1): The study focuses on (a) any named country outside the United States or Europe, or any general reference to regions outside the U.S./Europe (e.g., Africa, Asia, Latin America), \*\*including references to 'developing countries', 'emerging markets', 'low-income countries', 'middle-income countries', or 'low- and middle-income countries (LMICs)'\*; and/or (b) topics primarily about economic development or economic growth or economic progress; or (c) it examines any policy intervention, randomized controlled trial (RCT), or field experiment; or (d) the study mentions 'poverty', 'poor' or 'underserved' populations.
- Not relevant (Relevant\_study: 0): The study does not meet any of the criteria.

Rules:

- Output a dummy variable named "Relevant\_study": 1 if classified as relevant, else 0.
- If multiple regions or topics are mentioned, base the classification on the main focus of the study.

Output format

Return a single JSON object exactly with:

```
{  
  "Relevant_study": "1 | 0"  
}
```

Do not add extra keys. Do not include markdown."""

USER\_PROMPT = """"Classify the following text:

Text:

---

{chunk}

---

"""

We conducted a series of sanity checks of this approach, including hand-checking several

examples and comparing the classification using the LLM to the JEL codes associated with all articles published after 2011.