From Informal to Impactful: The way state interventions in the informal economy can reduce poverty rates

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ABSTRACT

The informal economy is ever-present in developing countries. It is present in any worker and small business out of the state's regulatory environment. Moreover, high poverty rates are also present in such developing countries. Therefore, finding a way to address the informal economy to see whether poverty can be reduced is paramount. Thus, this thesis will explore the research question of: *What state interventions to the informal economy can affect the countries' poverty rates across different levels of economic development?* For this purpose, this research will explore two state interventions: those facilitating business formalization and those providing social protection. By analyzing over 100 countries and conducting a multiple linear regression, this research has found a statistical effect of state interventions on the countries' poverty rates. The findings show that state interventions can affect the poverty rates of developing countries. However, such an effect is contingent on matters such as the level of corruption and government effectiveness. Thus, these findings pave the way for future focus on how the countries' institutional environment must be addressed when looking into how to target the informal economy to reduce poverty.

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I. INTRODUCTION

From street vendors to subcontracted workers, the informal economy is a fundamental piece of the puzzle to understand how to reduce poverty rates across the world. The informal economy is present in every aspect of daily life: in small shops, at food markets, as domestic workers, among other activities that run unregistered. Conceptually, it mainly refers to all economic activities by workers and businesses that are unregistered within their state (Jessen & Kluve, 2019). However, such informality might come at a cost: a large informal economy size is found to be associated with high poverty rates (Pham, 2022, p. 861). Additionally, developing countries are the ones experiencing both large informal economies and higher poverty rates (OECD, 2023). Therefore, scholars have argued that "there is an increased recognition that supporting the working poor in the informal economy is a pathway to reducing poverty and inequality" (Chen, 2012, p. 3).

The recent COVID-19 pandemic shed some light as to why it is societally relevant to understand how the states can intervene in the informal economy to reduce poverty rates. This is because those in the informal economy were among the hardest hit by the pandemic due to the vulnerabilities and lack of social protection that their jobs entailed (Ohnsorge & Yu, 2022, p. 291). However, the disproportionate impacts COVID-19 brought are not the only factor that unveils the crucial importance of addressing the informal economy. For instance, the International Labor Organization (ILO) (2018) has found concerning figures: more than 60% of the world's employed population is part of the informal economy. This means that more than 2 billion people work informally in developing countries while lacking social protection. Hence, for a reduction in poverty rates, it is vital to address the sector where most poverty lies: the informal economy.

So far, the literature has focused on assessing the relationship between the informal economy's size with poverty rates. As mentioned, the previous literature has established that as the size of the informal economy increases, so do the countries' poverty rates. In addition, such a relationship between the size of the informal economy and poverty rates can be dependent on the countries' level of economic development (Pham, 2022, pp. 861-876). This means that not all developing countries experience the effects of a large informal economy in the same way. According to the World Bank (WB) (2024c), such developing countries are categorized into three groups according to their level of economic development: low-income, lower-middle-

income, and upper-middle-income. Thus, low-income countries would experience the effect of a large informal sector on its poverty rates in a different way than upper-middle-income countries, for example.

Considering the association of a large informal economy with high poverty rates, much research has given out policy recommendations to decrease such an informal economy. Such recommendations have taken the form of state interventions. Thus, scholars – like those already mentioned – have argued that the state can intervene to incentivize formalization. As a result, two main types of state interventions in the informal economy have been discussed: those facilitating business formalization, and those promoting social protection. In this way, these two types of interventions are expected to decrease the countries' informal economy size. However, existing literature cannot assert whether such interventions to the informal economy will reduce poverty rates in developing countries.

Rather, existing literature has assessed three relationships: 1) the effect of the informal economy's size on poverty rates, 2) the effect of the level of economic development in the interplay between the informal economy's size and poverty rates, and 3) the effect of state interventions on the informal economy's size. Therefore, no previous research has put together these relationships to study whether such state interventions to the informal economy would reduce the *poverty rates* of developing countries with different levels of economic development. Hence, it is academically relevant to address such a research gap by answering this thesis' research question of *"What state interventions to the informal economy can reduce the countries' poverty rates across different levels of economic development?"*

This thesis will start by reviewing the previous literature on the informal economy and the countries' poverty rates, as well as the effect of state interventions on this sector. Later, it will develop hypotheses pushing forward two types of state interventions: those facilitating business formalization and those granting social protection. To test these hypotheses, this thesis will employ statistical analysis to assess whether there is an effect of such interventions on the developing countries' poverty rates. Moreover, it will assess whether the state interventions are more effective in reducing poverty depending on the countries' level of economic development. In other words, this thesis wants to further explore which state intervention will work best when reducing poverty for low-income countries, which for lower-middle-income countries, and which for upper-middle-income countries; or whether there is any effect at all.

II. THEORETICAL DISCUSSION AND FRAMEWORK

a. The rise of the informal economy and its schools of thought

For the past decades, there has been ample discussion as to why the informal economy persists. Such an informal economy is most noticeable in the streets: street vendors in Mexico City, artisans in unregistered markets in Sao Paulo, push-cart vendors in Hanoi, etc. However, informality exists also in small businesses that may not have the capacity to pay the costs of registering their enterprise. It may also exist in the form of janitors, delivery people, and subcontracted workers of the like who may be hired in this fashion to avoid the costs that come with formalization. Such an informal economy is not only the means of basic subsistence to some but is also strictly related to the presence of high poverty rates, as found by Pham (2022, p. 861). Additionally, this large informal economy contributes significantly to the global economy but is paradoxically excluded from the social protection and regulation of their states (Chen, 2012, p. 4). This is because since informal workers are unregistered, they may be outside of the state's scope when granting benefits such as unemployment benefits and health insurance. But if this is the case, why would people still choose informal jobs?

To answer the latter question, the field of study of the informal economy has gained renewed interest. A brief introduction to the renewed interest in this field goes as far as the decades of 1950s and 1960s. In these decades, the most salient idea was that as countries economically developed, the rise of capitalism would be able to absorb the informal economy into formal jobs that were registered and socially protected by the state. However, economic crises - such as that of Latin America in the 1980s and Asia in the 1990s - proved that during economic stagnation, the informal economy increased. This was because the economic crisis permeated the capacity of employers to keep paying wages. Thus, those who were laid off found the informal economy as their way to generate income. Likewise, the 2008s Great Recession followed this pattern by increasing the size of the informal economy. As a result, studying the informal economy and understanding why it persists has been ever-present (Chen, 2012, pp. 2-3).

Such renewed interest in what drives people to informal jobs has led scholars to several theories. For instance, Pham's (2022, p. 863) research on the informal economy and poverty rates employed two main theories: the Dualistic Labor Approach and the Tax-Based Theory. The

former is built based on the Harris-Todaro model which argues that rural-urban migration happens when the expected urban income is perceived as higher than the rural income. In this light, the urban informal economy absorbs the excess supply of workers trying to get into the formal economy in the urban areas. Therefore, the choice of entering the informal economy is involuntary as it stems from an excess of supply in the urban areas. The latter theory argues that a more rigorous taxing system is set in place as countries economically develop. Consequently, poor workers voluntarily enter the informal economy to avoid the costs coming with formalization such as paying taxes (p. 876).

Accordingly, Chen (2012, p. 5) brought to light two additional theories: the Voluntarist, and the Legalist theory. The Voluntarist theory argues that people choose informal jobs to escape certain costs that come with formalization. In simple terms, this theory would argue that a small business like a bike repair shop, for example, would rather lack the benefits of formalization – such as easier access to credit and social protection – than pay the costs of formalizing – such as taxation and registration fees. Similarly, the Legalist theory would argue that people choose to remain informal because the costs of formalization outweigh the benefits. Nevertheless, this choice stems from severe economic need rather than personal preference (p. 5). Notably, these theories are parallel to those of Pham (2022).

b. More informality, more poverty?

So far, this thesis has introduced why there has been a renewed interest in the informal economy and the theories explaining why people would remain in such an economy. Now, it will review the literature that specifically studies the relationship between the informal economy and poverty rates. Is it possible that as the share of people in the informal economy increases, the poverty rates do too? Or is it the other way around? These questions led to different findings by scholars such as Ohnsorge & Yu (2022), Sharma & Adhikari (2020), and Pham (2022).

Firstly, Ohnsorge & Yu's (2022, p. 286) extensive empirical findings are part of a book written for the World Bank. In this book, the authors find that countries with larger informal economies have greater poverty and lower per capita incomes. In the process, they also found that better control of corruption can reduce the size of the informal economy. Additionally, they assert that a large informal economy is also associated with less effective policy institutions and

thus less government effectiveness. As they argue, this might be because a large informal economy automatically decreases the amount of tax revenue the state can collect (p. 134). This is because people in the informal economy operate outside of the formal tax system, thus not paying income taxes for example. However, it is worth noting that people in the informal economy somewhat contribute to the state's tax revenue by paying value-added taxes on inputs and services (Women in Informal Employment: Globalizing and Organizing, n.d.). Moreover, Ohnsorge & Yu (2022, p. 150), found that declines in informality are also associated with declines in poverty rates, but not in income inequality. Therefore, Ohnsorge & Yu (2022), present a pessimistic view of a large informal economy: it is associated with high poverty rates.

Secondly, Sharma & Adhikari (2020) compiled many studies on the relationship between the informal economy and poverty rates. Most of their reviewed studies are in line with Ohnsorge & Yu's (2022) view. However, some of their findings differ from the latter stance. For instance, they found that "a large part of the literature shows that there is a positive relation between informality and poverty alleviation" (Sharma & Adhikari, 2020, p. 177). This is because many low-income households depend on the informal economy to meet their most basic needs. Thus, Sharma & Adhikari (2020, p. 168) argue that it should be acknowledged that a large informal economy may be beneficial for the poor as it is their source of living.

Thirdly, Pham (2022) presents a contrasting view of that of Sharma & Adhikari (2020). Rather than arguing that the persistence of the informal economy is beneficial for poverty reduction, she argues that informality does not present this effect in the long run. To test this assertion, she conducted an empirical study with more than 100 countries included. In this, Pham (2022, p. 861) found that a large informal economy increases the poverty rates across countries. Moreover, she goes further by exploring how the degree of economic development affects the interaction between the informal economy and poverty. Building on the fact that low-income, lower-middle-income, and upper-middle-income countries are those experiencing a larger informal economy and higher poverty rates (OECD, 2023), Pham (2022) only studied countries on this level of economic development. Hence, she found that the effect the informal economy has on poverty rates can be different depending on the level of economic development a country finds itself in.

For example, low-income countries initially benefit from a large informal economy as it can reduce moderate poverty (Pham, 2022, p. 876). This finding can be explained by the

previously mentioned Dualistic Labor Approach which would argue that people in moderate poverty see their incomes rise as they move from the rural to the urban area. However, Pham (2022, p. 876) stresses that although beneficial in the short run, a large informal economy ends up increasing the poverty rates for those in extreme poverty. This is because as the moderate poor see their incomes rise in the urban informal economy, the extreme poor see their living standards decline as they are now competing with the better-skilled moderate poor. As a result, they resort to worse jobs that put them in more vulnerable positions. Furthermore, she finds that lower-middle-income and upper-middle-income countries see poverty rise when the size of the informal economy increases. This is because entering the informal economy comes as a second choice for poor workers who cannot access the formal economy due to their low skills (p. 872). Additionally, an increase in informality leads to an increase in poverty rates and enhances a poverty trap for countries at this stage of their economic development. All in all, empirical findings seem to argue that a large informal economy affects countries' poverty rates. Although such an effect may be different for countries in different stages of economic development, the reviewed authors suggest several state interventions that can encourage formalization. These interventions will be addressed in the next section.

c. Reducing the size of the informal economy through state interventions

As argued by the discussed scholars, most findings lead to the conclusion that a large informal economy is positively associated with poverty. Thus, as the informal economy increases its size, the percentage of people in poverty also increases. However, the previous section discussed what can drive people to either choose informality or use it as a last resource. Nonetheless, what could incentivize people to enter the formal economy instead? For this purpose, scholars have emphasized that to encourage formalization, the state needs to provide incentives for this matter to both informal workers and informal businesses.

For instance, Chen's (2012, p. 16) study includes a comprehensive approach that suggests how the state can intervene to reduce informality. In it, both informal workers and informal businesses are targeted. On the one hand, to incentivize informal businesses to formalize, the state could simplify what comes with formalizing. More specifically, it could simplify the registration procedures, enhance property rights, and provide easy access to government subsidies and incentives, among others. On the other hand, incentivizing informal workers would

require that the state strengthens the benefits of being formally employed. This means that workers in the informal economy could be incentivized to formalize as long as the state provides benefits such as health insurance, and contributions to pensions, among others. However, her study did not go as far as to statistically test the effect of these interventions on either the size of the informal economy or on poverty rates.

Nonetheless, additional scholars have put to test the effect of state interventions on the informal economy's size. Building on Chen (2012), they have generally studied two kinds of interventions: those targeting informal businesses, and those targeting informal workers. For example, Jessen & Kluve (2019) assessed the effectiveness of state interventions to reduce informality in low-income, lower-middle-income, and upper-middle-income countries. Accordingly, they assessed two main interventions: those targeting businesses – which they called "simplification interventions" – and those targeting workers – which they called "social security interventions" (p. 6). As an example of simplification interventions, they studied a reform in Mexico that significantly reduced the average number of days it takes to formally register a business. However, they do not expand as to what they mean by "social security interventions". Regardless, their main finding is that social security interventions – targeting informal workers - were the most effective in reducing the size of the informal economy (p. 34). Interestingly, Jessen & Kluve (2019, p. 35) also argue that state interventions, in whichever form, were more effective in reducing the informal economy's size under favorable economic conditions.

Strictly focusing on state interventions targeting the informal workers – rather than informal businesses –Kolev, La, & Manfredi (2023) also included the economic conditions in the conversation. However, unlike Pham (2022) and Jessen & Kluve (2019), they assessed the economic conditions of the informal workers instead of those of the countries. To do this, Kolev, La, & Manfredi (2023, p. 10) divided state interventions targeting informal workers into two sets of programs: contributory and non-contributory. While contributory programs are *employment-based* social protection such as health insurance and pensions, non-contributory programs are *unconditional* cash transfers. In essence, the former would require that the informal worker's employer contributes monetarily to this scheme while the latter is mainly funded by the government's tax revenue. As a result, Kolev, La, & Manfredi (2023, p. 20) found that informal workers benefit differently from programs depending on their income class. More specifically,

contributory programs mostly benefit richer informal workers while non-contributory programs are even considered "pro-poor" (p. 21). This finding can be explained by the fact that in developing countries, most informal workers are part of micro, small, or medium-sized firms (MSMEs). By being less productive and by employing less skilled workers than large firms, the MSMEs may struggle more when offering competitive wages and granting employment-based protection (p. 19). As a result, informal workers may rely more on non-contributory programs on average.

Finally, a series of interviews conducted by the World Bank (WB) (2023) highlighted the need to take into consideration state interventions that target informal businesses. In sum, the WB (2023) conducted over 15,000 interviews with informal businesses in developing countries to understand what is incentivizing these to remain informal. Their findings show that, in general, burdensome regulations were pushing informal businesses away from taking the steps to formalize. In simpler terms, this could be translated into the vast amount of time it can take for a business to register formally and the taxes that come with this process. Additionally, the WB (2023) found that formalizing a business meant that it had to pass "the test of time". Essentially, this means that as a business formalizes and grows, it can unfortunately catch the attention of corrupt officials who may disturb the business environment. In addition, the WB (2023) argued that in lower-middle-income and upper-middle-income countries, a higher corporate income tax rate was associated with informality. Notably, this latter argument follows Pham's (2022) Tax-Based theory. As previously mentioned, this theory argues that as countries economically develop, a more rigorous taxing system is set in place. In turn, this incentivizes informality.

d. Hypotheses and conceptualization

After reviewing the literature that underscores the theories behind the informal economy, its association with poverty, and the state interventions to reduce informality, this thesis will now draw some hypotheses. Firstly, it is noticeable that most literature stresses that a large informal economy is associated with high poverty rates in developing countries. This finding has led scholars to test out the effectiveness of state interventions -either targeting informal businesses or informal workers - on the size of the informal economy. As the discussed literature shows, these interventions can reduce the size of the informal economy. Additionally, most reviewed literature focuses on low-income, lower-middle-income, and upper-middle-income countries. Therefore, if

a large informal economy is associated with high poverty rates; and state interventions can reduce the size of the informal economy, it is arguable that state interventions to this informal economy can reduce the countries' poverty rates. Consequently, this thesis's first hypothesis is:

H_1= State interventions, both facilitating business formalization and covering social protection for informal workers, will reduce the poverty rates of developing countries (those categorized as low-income, lower-middle-income, and upper-middle-income countries).

Secondly, the reviewed literature has shown that state interventions targeting informal workers are effective when reducing the size of the informal economy. This has been highlighted by the findings related to the "social protection interventions" stressed by Jessen & Kluve (2019) and by the "non-contributory programs" by Kolev, La, & Manfredi (2023). Subsequently, it was revealed by Kolev, La, & Manfredi (2023) that extending social protection was more accessible and impactful for the poorest segment of the countries. Henceforth, it is arguable that interventions targeting informal workers through social protection could create a bigger impact on low-income countries' poverty rates. This leads to the second hypothesis:

H_2 = State interventions specifically focusing on expanding social protection, will have a larger impact on reducing poverty rates of low-income countries compared to other developing countries.

Thirdly, the literature employed several theories and findings to understand what motivates informal businesses to remain informal. Most notably, the Tax-Based theory emphasized how economic development came with high costs of entry to formalization. This theory was additionally backed by Ohnsorge & Yu's (2022) findings: informality is associated with a higher corporate tax rate in lower-middle-income and upper-middle-income countries. As a result, it can be inferred that countries at a higher stage of their economic development could benefit more from interventions that reduce the entry costs to formalization. This leads to the third and final hypothesis:

H_3= State interventions specifically facilitating business formalization, will have a larger impact on reducing poverty rates of lower-middle-income and upper-middle-countries compared to low-income countries.

To move forward to how this thesis will explore these hypotheses, it is essential to conceptualize the informal economy, the addressed state interventions, and poverty rates. Firstly, the informal economy will be conceptualized following ILO's (2015) definition: "all economic

activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements". This definition is directly aligned with this thesis' field of research because it captures the full range of informality by including both informal workers and informal businesses. While this thesis could have employed the term "informal sector" instead, most literature in the field benefits from ILO's (2015) conceptual definition of the informal economy. This is because, as the ILO (2015) argues, the definition of the informal sector only included informal businesses and excluded informal workers. Therefore, informal workers and informal businesses are all those who are part of the informal economy.

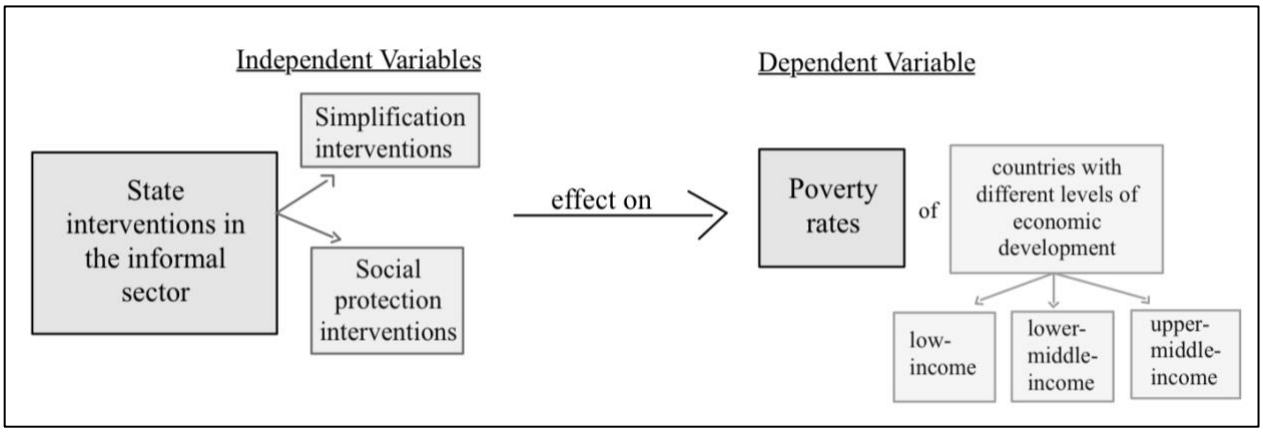
To define "state interventions", this thesis will employ Jessen & Kluve's (2019) conceptualization. They employ the term "state interventions" to refer to policies and programs that can be implemented to increase the formalization of businesses, workers, or even both (p. 3). Likewise, Jessen & Kluve's (2019) notion of "simplification interventions" will be used in this thesis. Particularly, simplification interventions are those that simplify business entry regulations, and business registration procedures which typically involve a decrease in the number of days required for registration (p. 7). Therefore, this thesis will conceptualize any intervention targeted at informal businesses as "simplification interventions". This conceptualization will be employed as it encompasses the interventions targeted at informal businesses that the discussed literature mentioned.

To cover state interventions that mainly target informal workers, the term "social protection interventions" will be defined as follows: programs that target the poor and vulnerable and are focused on providing non-contributory transfers in cash or in-kind (World Bank, 2024a). This definition is beneficial to this thesis because it emphasizes Kolev, La, & Manfredi's (2023) findings which argued that non-contributory programs were the most impactful to the poorest segment of the countries. Finally, "poverty rates" will be conceptualized by employing the WB's (2024b) definition of Multidimensional Poverty. In sum, this definition goes beyond monetary deprivations by including access to infrastructure, education, and the monetary headcount ratio at the $2.15 international poverty line. Therefore, the notion of "poverty rates" will refer to the Multidimensional Poverty score set by the WB (2024b) which encapsulates the deprivation of three key dimensions: health, education, and living standards. This conceptualization is chosen for this thesis as it provides a broader understanding of the deprivations that would lead someone to be categorized as poor.

Notwithstanding, to test this thesis' hypotheses, it is important to denote what "low-income, lower-middle-income, and upper-middle-income countries" stand for. For this purpose, the WB's (2024c) categorization will be employed. It classifies countries under a threshold set by their GNI per capita as of the year 2022. Therefore, low-income countries are those whose GNI per capita is less than $1135, lower-middle-income countries are those between $1,136 and $4,465, and upper-middle-income countries are those between $4,466 and $13,845.

To sum up this thesis' theoretical framework and the effect it aims to assess, the figure below can provide some clarity.

Figure 1: Diagram visualizing this thesis' conceptual framework.



III. RESEARCH DESIGN AND METHODOLOGY

a. Research Approach

To answer this thesis' research question, a multivariate analysis will be conducted with the statistical software SPSS. This statistical method is best suited for this research due to two main factors: 1) it can examine the effect of multiple factors on the same dependent variable while controlling for additional factors, and 2) it can compare the explanatory power of multiple hypotheses (Halperin & Heath, 2017, p. 451). Therefore, this thesis will develop a multiple linear regression because it allows for an analysis with more than one independent variable. This method fits the research question and the previous theoretical framework because it can thus assess the impact of its two independent variables – simplification interventions, and social protection interventions – on the dependent variable – poverty rates -. Additionally, it can address the three hypotheses established while controlling for additional variables. As so, the level of corruption and government effectiveness will be taken as control variables. This is because, as Ohnsorge & Yu (2022) and the WB (2023) noted, both corruption and government effectiveness played a role in how impactful state interventions to the informal economy can be.

b. Case Selection

For the case selection, this thesis will assess low-income, lower-middle-income, and upper-middle-income countries. This selection is built on the previous theoretical framework that analyzed scholars who chose these countries as a reference point. Moreover, it accurately addresses one of the objectives of this thesis which aimed to assess the impact of state interventions to the informal economy in countries *across different levels of economic development*. Therefore, the case selection lies in developing countries with different levels of income. As will be further discussed, three datasets will be employed to conduct the multiple linear regression. By merging these, this thesis will end up observing 129 countries that exist in the three datasets.

c. Datasets and Operationalization

Regarding the methods of data collection, 3 different datasets by the World Bank will be employed. The first one is the *Doing Business* dataset (WB, 2024d). This dataset can capture the

"simplification interventions" independent variable by borrowing its "Ease of Doing Business score" variable. Such a variable establishes the simple average score of indicators such as how long it takes to start a business, deal with construction permits, and how easy it is to get credit and pay taxes, among others. As a result, it gives out a score for each country on a scale of 0 to 100; a value of 100 would mean that a country has the best performance when facilitating business formalization.

The second dataset will be the WB's (2024e) Atlas *of Social Protection Indicators (ASPIRE).* It is focused on the topic of social protection thus covering this thesis' second independent variable of social protection interventions. In this light, this dataset has a variable named "Coverage % of Social Assistance" which quantifies the percentage of the population participating in social protection schemes in each observed country. More specifically, it directly measures to what extent countries are providing cash transfers and non-contributory programs to their population, which directly aligns with the thesis' theoretical framework. Such a variable ranges from 0 to 100 directly referring to the percentage of the population covered by social protection.

Finally, the third dataset, WB's (2024f) *World Development Indicators*, will be employed to measure the dependent variable – poverty rates – and control variables – level of corruption and government effectiveness -. Firstly, this dataset's variable of "Multidimensional poverty headcount ratio" measures the percentage of each country's population living in poverty. As conceptualized in the previous section, it fits with this thesis' framework by providing a more nuanced understanding of poverty. Accordingly, this variable goes from a value of 0 to 100 directly referring to the percentage of the population considered on living in poverty. Secondly, the variable "Control of Corruption: Estimate" will be borrowed for this thesis' control variable of the level of corruption. Essentially, it captures the perceptions of the extent to which public power is wrongfully used for private gain. Such a variable ranges from -2.5 to 2.5. A value of 2.5 would indicate that a country suffers from the highest perception of the level of corruption. Lastly, this dataset also provides the variable of "Government Effectiveness: Estimate" which captures the perception of the quality of governance. Mainly, it aggregates the scores of indicators such as the quality of the country's infrastructure, quality of public services, degree of independence from political pressures, etc. As with the latter variable, its values range from -2.5

to 2.5. Accordingly, a value of 2.5 would indicate that a country has the perception that its government is highly effective.

To test the second and third hypotheses, it is important to disaggregate the countries by their level of income. Therefore, this thesis will benefit from 3 interaction terms in the form of dummies, each classifying a country as either low-income, lower-middle-income, or upper-middle-income based on the categorization provided by the WB (2024c). These interaction terms are useful as they can test the influence of the level of economic development on the relationship between the state interventions to the informal economy on the countries' poverty rates (Halperin & Heath, 2017, p. 457).

d. Quality Assurance

To provide quality assurance, the aforementioned datasets were chosen because they appropriately capture the variables of this research. After a thorough study of alternative datasets, the ones selected are the most comprehensive and adequate as they include the most data and can be easily merged. Considering the availability of data, the independent variables account for the year 2019 while the dependent variable accounts for the years 2020 to 2023 as an aggregate mean value. This timeframe was selected because these years are the most recent to the time of writing and have the most amount of data.

However, the variables used for "social protection interventions" and "poverty rates" have a considerable amount of missing data which automatically restricts the statistical power of the multiple regression. This problem is addressed by Halperin & Heath (2017, p. 396) who suggest statistical techniques such as data imputation which predicts the missing values based on the available values of the regression. This data imputation technique has been endorsed by authors such as van Ginkel, Linting, Rippe & van der Voort (2020, p. 307) who argued that it is the most preferred way of addressing missing values, in comparison to listwise and pairwise deletion techniques. Therefore, this thesis will perform data imputation to address the issue of missing data and will look at the given pooled dataset. Additionally, it is worth mentioning that the datasets cover the whole population, not just those in the informal economy. However, the reviewed theories stressed that the studied interventions would affect the informal economy's size regardless of whether these were imposed only on this sector or on the whole population.

IV. RESEARCH RESULTS AND ANALYSIS

After running the multiple linear regression, the coefficient table is displayed below as Table 1. As this section develops further, the regression results will be interpreted according to their statistical effect and significance. Afterward, an analysis will be conducted to test this thesis' 3 hypotheses and to understand their implications in the context of the previous theoretical framework.

Table 1: Multiple linear regression coefficients table

	Model 1	**Model 2**	**Model 3**
(Constant)	55,827***	-7,512	-6,132
	(2,425)	(4,236)	(4,147)
Simplification interventions	-,538***	,341***	,286***
	(,043)	(0,063)	(,063)
Social protection interventions	-,081***	,000	,004
	(,022)	(,020)	(,033)
Corruption		13,745***	11,906***
		(1,290)	(1,280)
Government effectiveness		-30,791***	-25,754***
		(1,745)	(1,823)
Simplification interventions * Low-income			,238***
			(,044)
Simplification interventions *Lower-middle-income			,074*
			(,029)
Social protection interventions * Low-income			,020
			(,060)
Social protection interventions * Lower-middle-income			-,032
			(,042)
R^2	,145	,315	,349
Adj. R^2	,144	,313	,345
N	129	129	129

Note: *regression coefficients with standard errors in brackets.*
***p<0,001, **p<0,01, *p<0,05

In the regression, three models were constructed to understand the role the control variables and interaction terms play when affecting poverty rates. Accordingly, Model 1 only includes the independent variables – simplification interventions and social protection interventions -. Model 2 includes the independent variables plus the control ones – level of corruption and government effectiveness -. Finally, Model 3 adds to the latter by including the interaction terms that directly address the level of economic development. Since Model 3 included all variables, more focus will be given to it when analyzing the hypotheses. Moreover, even if this regression met all multiple linear regression assumptions (as shown in Appendix A), it had a problem with multicollinearity. Consequently, even if the upper-middle-income countries' poverty rate values are still included in the regression, its interaction terms were excluded from the model to fix such multicollinearity. Therefore, although included in the model, it could not be tested how the interventions would affect the upper-middle-income countries separately. For an expanded discussion of this matter, refer to Appendix B.

a. Model 1

As shown in Figure 1, by only including the simplification interventions and the social protection interventions in the model, Model 1 can explain 14,5% of the variance in poverty rates. This can be seen in the R^2 value of ,145. Furthermore, the simplification interventions coefficient shows a statistically significant effect at the 99% level (p<,001). This is also the case for the social protection interventions, which also show statistical significance (p<,001).

As a result, an increase of one unit of the simplification interventions variable is associated with a ,538 unit decrease in poverty rates. Similarly, an increase of one unit of the social protection interventions is associated with a ,081 decrease in poverty rates. Therefore, this model initially suggests that both interventions can reduce the poverty rates of developing countries. However, this model is limited because it has not yet included the control variables or the interaction terms.

b. Model 2

By adding the control variables – level of corruption and government effectiveness – an interesting change in Model 2 vis-à-vis Model 1 can be observed. Firstly, this model is now able

to explain 31,5 % of the variance of poverty rates (as seen in its R^2 value). This shows that including the control variables in the model resulted in an improved model fit.

Unexpectedly, the simplification interventions coefficient now presents a statistically significant positive value of ,341 (p<,001). This, in turn, implies that one unit increase in simplification interventions leads to a ,341 units *increase* in the poverty rates of developing countries. Therefore, once the regression accounts for the role of corruption and government effectiveness, the simplification interventions increase poverty, rather than decrease it. Also, the social protection interventions lost their statistical significance. Therefore, this model showcases how including the control variables created a sharp change in the findings.

Thus, by looking at the control variables, it is noticeable that both corruption and government effectiveness were statistically significant (p<,001). Expectedly, the corruption coefficient is positive implying that a one unit increase in corruption is associated with a 13,745 unit increase in poverty rates. Lastly, the control variable of government effectiveness shows that a one unit increase in this variable leads to 30,791 units decrease in poverty rates. All in all, this model underscores the importance of including the control variables because of their large effect and the changes seen from Model 1 to Model 2.

c. Model 3

This final model complemented Model 2 by adding the interaction terms that addressed the countries' different levels of economic development. This model accounts for 34,9% of the variance in poverty rates – as seen in R^2 -. This value is similar to that of Model 2, indicating that they can explain almost the same amount of variance. Also, other similarities can be found. For instance, the simplification interventions coefficient remained statistically significant and positive with a value of ,286 (p<,001). This indicates that simplification interventions still increase poverty rates. In addition, the social protection interventions remained statistically insignificant. Furthermore, both control variables are still statistically significant (p<,001), and still show that high levels of corruption increase poverty rates while high levels of government effectiveness decrease them.

The interaction terms will be analyzed to determine whether there is a change, depending on the level of economic development, in the relationship between the interventions and the poverty rates. Firstly, the interaction terms of social protection interventions were not statistically

significant. This was expected because this model, coupled with Model 2, did not show statistical significance for the social protection interventions variable alone. However, the simplification interventions' interaction terms are statistically significant. Firstly, the term simplification interventions by low-income countries shows a positive value of ,238 (p<,001). This finding suggests that the effect of the simplification interventions on poverty rates is higher in low-income countries by ,238 units compared to other countries. Secondly, the term simplification intervention by lower-middle-income countries shows a positive value of ,074 (p<,05). Thus, the effect of simplification interventions on poverty rates is higher by ,074 units compared to other countries.

d. Analysis and Implications

After a statistical interpretation, this thesis will analyze the findings to test the hypotheses. On the one hand, Model 1 suggested what was expected from the previous theoretical framework: state interventions to the informal economy can reduce poverty rates in developing countries. However, this model did not account for the role of corruption and government effectiveness. On the other hand, the following models showed unexpected findings as soon as they controlled for the level of corruption and government effectiveness.

To begin with, the variable of social protection interventions, along with its interaction terms, lost statistical significance. This could have happened because before the control variables were introduced, Model 1 might have attributed the effects of the level of corruption and government effectiveness to the social protection interventions. Therefore, the addition of the control variables showcased how, in reality, these variables were the ones affecting poverty rates. Hence, the impact of the control variables suggests that the level of corruption and government effectiveness play a substantial role when affecting the poverty rates of developing countries. As the previous theoretical framework had noted, scholars such as Ohnsorge & Yu (2022) argued that better control of corruption could reduce the size of the informal economy. Also, they argued that a large informal economy was associated with less government effectiveness (p. 286). As a result, it could be that to reduce poverty through the means of social protection interventions, these measures have to be coupled with better control of corruption and government effectiveness.

Another interesting finding is that once controlling for corruption and government effectiveness, the simplification interventions changed from reducing poverty to increasing it. Henceforth, it is arguable that without promoting better control of corruption and proper government effectiveness, simplification interventions alone might not be beneficial, or even counterproductive, when reducing the poverty rates of developing countries. Moreover, the results indicated that simplification interventions increase the poverty rates of low-income and lower-middle-income countries similarly. Unexpected to the reviewed literature, this means that regardless of the developing countries' level of economic development, simplification interventions alone will affect poverty rates almost to the same extent.

All in all, it can be inferred that interventions facilitating business formalization might marginalize certain people such as low-skilled workers or small businesses. This could be because, as simplification interventions might induce formalization, these people might find it hard to compete in a more formalized economy. So, while the moderate poor could benefit from these interventions, the extreme poor could find it counterproductive. This implication can be directly linked to Pham's (2022) findings which highlighted how the experience of the moderate poor to the extreme poor might not be the same. Thus, this implies that it is necessary to assess interventions targeting poverty not as a one-size-fits-all matter, but by disaggregating the different levels of poverty. Simultaneously, high levels of corruption could hinder the efficacy of state interventions to the informal economy. This was previously noted by the WB (2023) where it was argued that as businesses formalize, they can catch the attention of corrupt officials who might distort the benefits coming with the interventions.

After a thorough analysis of the regression results, none of the hypotheses can be corroborated. Model 1 seemed to support the first hypothesis, which argued that interventions to the informal economy, both simplification interventions and social protection interventions, would reduce the poverty rates of developing countries. However, as soon as the level of corruption and government effectiveness were included, the interventions' effects either became insignificant or inadvertently increased poverty. Regarding the second hypothesis, the statistically insignificant findings did not show that social protection interventions would reduce the poverty rates of low-income countries in a greater way than in other countries. Thus, the second hypothesis could not be supported. Finally, the third hypothesis could only be partially tested due to the exclusion of the upper-middle-countries interaction term (refer to Appendix B).

However, this hypothesis could not be supported because simplification interventions increased poverty rather than decreased it in lower-middle-income countries.

Summarizing the analysis of the findings, it can be argued that although theoretically state interventions to the informal economy could reduce the poverty rates of developing countries, such an effect is highly contingent on the level of corruption and government effectiveness. Therefore, future state interventions should aim to address how to simultaneously enhance low corruption levels, proper government effectiveness, and formalization incentives. Additionally, state interventions to the informal economy should be tailored in a way that accounts for the countries' institutional environment, such as their level of corruption and government effectiveness.

V. CONCLUSION AND REFLECTION

In an attempt to understand how to reduce poverty in developing countries, this thesis sought to target the informal economy through state interventions. There is much that explains why targeting the informal economy is crucial. As mentioned, scholars denoted how more than 60% of the world's employed population is part of the informal economy (ILO, 2018). At the same time, both high poverty rates and large informal economies are present mostly in developing countries (OECD, 2023). Therefore, this thesis explored what state interventions to the informal economy could reduce the poverty rates of developing countries.

In sum, it looked at state interventions that can theoretically incentivize both workers and businesses to formalize. While one intervention focused on facilitating the entry of businesses into the formal economy, the other intervention encouraged informal workers to formalize by granting them social protection. As evidenced in the findings, these state interventions did affect the poverty rates. However, the most crucial finding is that such an effect is reliant on the extent to which developing countries suffer from high levels of corruption or benefit from government effectiveness. As a result, this finding underscores the need for state interventions to acknowledge the countries' institutional environment. Thus, state interventions that do not take such an institutional environment into account, can either be insignificant or counterproductive.

The strengths of this thesis mainly rely on the theoretical framework and chosen methodology. On the one hand, it accurately addressed an important research gap. The relationships between the informal economy's size with poverty rates, and the state interventions' effectiveness with the informal economy's size, had been studied in isolation. Therefore, this thesis managed to provide a nuanced understanding as to why it is fundamental to study the interplay of the informal economy, its state interventions, and the poverty rates simultaneously. Furthermore, it was able to address the different impacts due to the disaggregation of the levels of economic development. On the other hand, this thesis' strength can be captured by its methodology. It carefully merged three datasets that had also been studied in isolation, employed data imputation to address the substantial amount of missing data, and benefited from control variables and interaction terms. Additionally, it conducted three different models that were able to capture possible explanations as to why the level of corruption and

government effectiveness might play an overviewed role in the study of state interventions in the informal economy.

This thesis' weaknesses rely on the multicollinearity issues, its data limitations, and its somewhat limited external validity. Firstly, the interaction term accounting for upper-middle-income countries had to be excluded from the regression due to its multicollinearity. In turn, the third hypothesis could only be partially tested and limited the findings' linkage to the theoretical framework. Secondly, there was a considerable amount of missing data, specifically for the social protection interventions and the poverty rates. Although the datasets chosen were the most complete, there is still to be a dataset that can capture more data for a larger period of time. Even after employing data imputation, it is important to acknowledge that benefiting from more complete datasets would have provided a more acute understanding of the state interventions, the informal economy, and the poverty rates. Thirdly, this thesis' approach provided insightful findings by studying over 100 countries. Nevertheless, its findings may not be easily generalized to specific countries' contexts. This could thus alter the applicability and external validity of the findings. Additionally, the findings imply that there is a need to disaggregate the poverty rates to distinguish whether state interventions can be beneficial to the moderate poor while counterproductive to the extreme poor, for example.

As seen by the thesis' strengths and weaknesses, future research could focus on gathering additional raw data for the poverty rates and the coverage of social protection interventions. More importantly, the lack of data concerning poverty rates is highly problematic for this kind of research. Also, future research could benefit from qualitative analyses that can provide case studies to understand what state interventions work best when reducing poverty. As a result, it could be more deeply analyzed the role the level of corruption and government effectiveness play in this context. Also, disaggregating the different levels of poverty could be beneficial to understanding for whom state interventions might be beneficial. Finally, future research could also take a look into factors such as the level of education, and health-related interventions, among others, in this thesis' context.

All in all, this research has highlighted why addressing the informal economy is crucial for poverty reduction. As argued, the informal economy is considerably relevant in developing countries and is the main source of income for many. Thus, any policy with poverty reduction in mind has to include the informal economy in the conversation. Therefore, understanding what

kind of interventions to the informal economy have the capability of reducing poverty was the main objective of this thesis. As a result, the empirical findings pave the way for further research on what may restrict or enhance the effect of state interventions on the informal economy; and what kind of regulatory or institutional environment should be set in place so state interventions can reduce poverty rates. Notwithstanding, acknowledging the informal economy will always have to be one of the steps to reduce poverty in developing countries.

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VII. APPENDIX A

This appendix includes how the assumptions for multiple linear regression were tested in SPSS. However, it is worth indicating that the figures displayed in this appendix name the variables in a different way than Figure 1 (found in the Research Results and Analysis section). Therefore, Figure 1's "Simplification interventions" is coded below as "business_2019". Also, Figure 1's "Social protection interventions" is here coded as "social_protection". Accordingly, the interaction terms remained quite similar: those interacting with simplification interventions are coded as "business_lowincome", "business_lowmiddleincome", and "business_uppermiddleincome". In the same light, the variables interacting with social protection interventions are coded here as "socialprotection_lowincome", "socialprotection_lowmiddleincome", and "socialprotection_uppermiddleincome". The control variables remained the same.

Figure 2: Testing for independent errors assumption

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin–Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,381[a]	,145	,144	19,03003	,145	111,907	2	1321	<,001	
2	,561[b]	,315	,313	17,04517	,170	163,783	2	1319	<,001	
3	,591[c]	,349	,345	16,64118	,034	17,205	4	1315	<,001	1,929

a. Predictors: (Constant), social_protection, business_2019

b. Predictors: (Constant), social_protection, business_2019, corruption, governmenteffectiveness

c. Predictors: (Constant), social_protection, business_2019, corruption, governmenteffectiveness, business_lowmiddleincome, socialprotection_lowincome, business_lowincome, socialprotection_lowmiddleincome

d. Dependent Variable: poverty

The Durbin-Watson test was conducted to test for the independent error assumption. The test statistic is 1,929 (<3) indicating that this assumption is not violated as there is no evidence of autocorrelation in the residuals.

Figure 3: Testing for multicollinearity

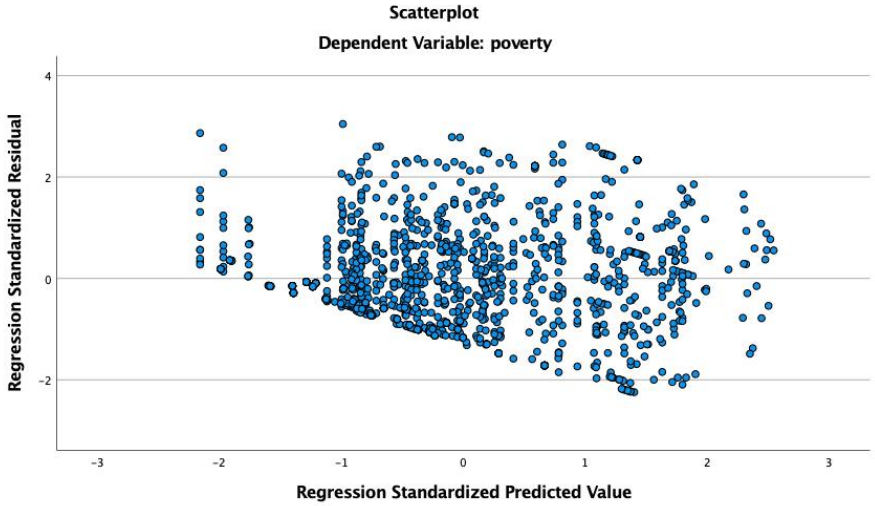
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	55,827	2,452		22,767	<,001	51,016	60,637		
	business_2019	-,538	,043	-,335	-12,402	<,001	-,624	-,453	,889	1,125
	social_protection	-,081	,022	-,101	-3,757	<,001	-,124	-,039	,889	1,125
2	(Constant)	-7,512	4,236		-1,773	,076	-15,822	,798		
	business_2019	,341	,063	,212	5,423	<,001	,218	,465	,339	2,948
	social_protection	,000	,020	,000	,006	,995	-,039	,039	,842	1,188
	corruption	13,745	1,290	,429	10,656	<,001	11,215	16,276	,320	3,121
	governmenteffectiveness	-30,791	1,745	-1,012	-17,642	<,001	-34,215	-27,367	,158	6,337
3	(Constant)	-6,132	4,147		-1,479	,139	-14,267	2,003		
	business_2019	,286	,063	,178	4,532	<,001	,162	,411	,321	3,119
	social_protection	,004	,033	,005	,123	,902	-,060	,068	,298	3,353
	corruption	11,906	1,280	,372	9,301	<,001	9,395	14,417	,310	3,224
	governmenteffectiveness	-25,574	1,823	-,841	-14,033	<,001	-29,150	-21,999	,138	7,249
	business_lowincome	,238	,044	,219	5,383	<,001	,151	,324	,298	3,353
	business_lowmiddleincome	,074	,029	,103	2,501	,013	,016	,131	,291	3,440
	socialprotection_lowincome	,020	,060	,013	,332	,740	-,098	,138	,324	3,086
	socialprotection_lowmiddleincome	-,032	,042	-,036	-,770	,441	-,114	,050	,225	4,451

a. Dependent Variable: poverty

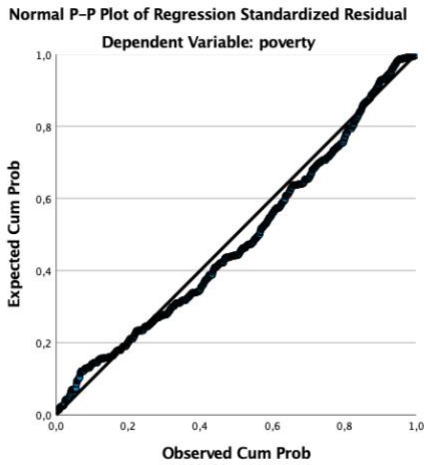
According to the VIF values (<10) there is no multicollinearity. Thus, the assumption of multicollinearity is met. Note that the interaction terms "socialprotection_uppermiddleincome", and "business_uppermiddleincome" were excluded by SPSS from the analysis. Therefore, this exclusion guaranteed that there was no multicollinearity. For a further discussion of the excluded interaction terms, check Appendix B.

Figure 4: Testing for homoscedasticity and linearity



As this figure shows, the assumption of homoscedasticity is met. This is because the spread of residuals is not consistently widening or narrowing when the predicted values increase. Also, the linearity assumption is met because the scatterplot does not seem to evidence a clear pattern such as a U-shape.

Figure 5: Testing for the normality of errors



The P-P plot shows that this assumption is met because residuals fall within the line.

Figure 6: Testing for outliers

Statistics

		|Std. Residuals| > 1.96	|Std. Residuals| >2.58	|Std. Residuals| > 3.29
N	Valid	95	9	0
	Missing	1324	1410	1419

|Std. Residuals| > 1.96

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	95	6,7	100,0	100,0
Missing	System	1324	93,3		
Total		1419	100,0		

|Std. Residuals| >2.58

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	9	,6	100,0	100,0
Missing	System	1410	99,4		
Total		1419	100,0		

|Std. Residuals| > 3.29

		Frequency	Percent
Missing	System	1419	100,0

According to the standardized residuals, there is no problem with outliers because there is less than 5% of cases holding a greater value than 1.96, less than 1% of cases greater than 2.58, and no absolute value greater than 3.29.

Figure 7: Testing for influential cases

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-4,4596	52,6650	21,7573	12,14926	1324
Std. Predicted Value	-2,158	2,544	,000	1,000	1324
Standard Error of Predicted Value	,765	4,235	1,321	,369	1324
Adjusted Predicted Value	-4,8504	52,5135	21,7608	12,15694	1324
Residual	-37,31113	50,70384	,00000	16,59079	1324
Std. Residual	-2,242	3,047	,000	,997	1324
Stud. Residual	-2,264	3,061	,000	1,001	1324
Deleted Residual	-38,03717	51,16531	-,00352	16,71456	1324
Stud. Deleted Residual	-2,267	3,071	,000	1,001	1324
Mahal. Distance	1,800	84,701	7,994	6,204	1324
Cook's Distance	,000	,027	,001	,002	1324
Centered Leverage Value	,001	,064	,006	,005	1324

a. Dependent Variable: poverty

This assumption is met because, by looking at Cook's Distance, all values are smaller than 1.

VIII. APPENDIX B

Figure 8: Assessing why some interaction terms were excluded from the regression

Correlations

		socialprotection_uppermiddleincome	business_uppermiddleincome
socialprotection_uppermiddleincome	Pearson Correlation	1	,806**
	Sig. (2-tailed)		,000
	N	1403	1403
business_uppermiddleincome	Pearson Correlation	,806**	1
	Sig. (2-tailed)	,000	
	N	1403	1419

**. Correlation is significant at the 0.01 level (2-tailed).

By conducting a Correlation Matrix with Pearson's correlation coefficients, it is noticeable that the interaction variables "socialprotection_uppermiddleincome", and "business_uppermiddleincome" were correlated with each other. This is because its positive value of .806 approximates 1 and is statistically significant (p<,001).

This correlation implies that these two variables have similar information on the variance of the dependent variable (poverty rates). Thus, this can lead to multicollinearity which is why SPSS excluded these variables from the regression. Theoretically, it could possibly imply that upper-middle-income countries have similar approaches to both social protection interventions and simplification interventions. Thus, almost identical values might appear due to this similarity and to the fact that the excluded interaction variables are both addressing the same level of economic development: upper-middle-income. As a result, they might be correlated because both could be influenced by the same set of characteristics such as their approach to these interventions. Moreover, it is important to add that additional Correlation Matrices were conducted to test whether these variables were correlated with those included in the regression. However, only the displayed Matrix (Figure 8 above) showcased correlation.