Master in Economics

Revisiting the Role of Religion on Corruption

Orfanidou Polyxeni

Supervisor: Panagiotidis Theodoros

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Abstract

This paper replicates Dincer's research on religious and ethnic diversity, focusing on recent years and utilizing polarization and fractionalization measures. The study explores the potential nonlinear relationship between religious and ethnic polarization with corruption and tests for cubic relationships in addition to Dincer's quadratic fractionalization model. The results reveal significant findings for religious polarization, challenging Dincer's linear perspective. It suggests that religiocentric behavior can occur in both strongly and weakly polarized societies. Strong religious polarization is associated with high corruption due to politicians favoring their religious supporters, leading to continued support even in the face of corruption allegations. Additionally, societies with the lowest religious polarization levels may exhibit high corruption due to a strong government-church connection, allowing corruption to persist unchecked. These findings highlight the intricate dynamics between diversity, polarization, and corruption, offering insights for further research and nuanced policy interventions.

List of Acronyms

FI *Fractionalization Index*
PI *Polarization Index*
EPI *Ethnic Polarization Index*
RPI *Religious Polarization Index*
EFI *Ethnic Fractionalization Index*
RFI *Religious Fractionalization Index*

Keywords

Corruption, Religious Polarization, Religious Fractionalization, Ethnic Polarization, Ethnic Fractionalization

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1. Introduction

Over the decades, corruption has emerged as a pervasive and multifaceted issue, ensnaring economies, societies, and political systems worldwide. This insidious practice undermines the very fabric of cultural, political, and economic landscapes, leaving a trail of destruction in its wake. While corruption takes various forms and operates on different scales, it shares a common thread: the abuse of power for personal gain.

Corruption is a chameleon-like phenomenon that assumes both subtle and grandiose disguises. On one end of the spectrum lies **petty corruption**, a covert world of small-scale transactions, where low-level bureaucrats and individuals exchange modest bribes for minor favors. These clandestine dealings often involve obtaining permits, expediting paperwork, or navigating the labyrinthine bureaucracy. Petty corruption's elusiveness makes it a challenge to detect, and its cumulative effect, when widespread, poses a grave threat to societal trust and public institutions.

Conversely, **grand corruption** occupies the opposite end of the spectrum, entailing high-stakes machinations orchestrated by influential figure, such as government officials, politicians, or those entrenched in positions of formidable power. This form of corruption transcends individual gain, as it plunges into the realm of significant favors and exorbitant financial transactions. Mega government projects, monumental contracts, and colossal policy decisions become the stage for grand corruption's performance. Bribes of monumental proportions exchange hands, embezzlement schemes unfold on a grand scale, and government policies may be twisted to suit personal or political ambitions. The impact of grand corruption is far-reaching, exacting a toll on entire economies and societies, diverting precious resources from public services and infrastructure development, and perpetuating a cycle of distrust in governance.

Corruption knows no boundaries; it seeps into the crevices of both developed and developing nations, emerging as a formidable obstacle to economic progress and social development. The World Bank aptly recognizes corruption as "the single greatest obstacle to economic and social development," while Transparency International underscores its ubiquitous nature, labeling it "one of the greatest challenges of the contemporary world."

To effectively combat the multifaceted menace of corruption, it is imperative not only to dissect its various forms, but also to comprehend the underlying factors that drive it. A significant contributor to corruption is societal conflict, which can manifest in various forms, including political power struggles, ethnic tensions, and religious discord. These conflicts fundamentally reshape societal behavior and attitudes, often leading to increased susceptibility to corrupt practices during periods of turmoil.

During periods of conflict, individuals may become more susceptible to engaging in corrupt practices as a means of survival or gaining an advantage amidst the chaos. Scarce resources, heightened competition, and weakened governance structures can incentivize corruption as a coping mechanism or as a way to navigate the uncertainty brought about by conflict.

Furthermore, conflicts can dramatically alter the way societies exercise their voting rights and make political choices. People may prioritize factors like ethnic or religious identity over other considerations or individuals may be more inclined to prioritize the interests of their own group over broader societal welfare, resulting in shifts in voting patterns and the emergence of ethnocentric or religiously motivated political movements. These shifts in political dynamics can, in turn, profoundly influence the prevalence and perception of corruption within a society.

By delving into the relationship between religious and ethnic conflict, diversity, and corruption, this research endeavors to illuminate how these intricate forces intersect and impact societies. It offers valuable insights for policymakers, scholars, and stakeholders striving to address corruption and promote peace in regions prone to conflict. Understanding these dynamics is crucial for devising effective strategies to combat corruption's root causes and consequences in societies facing the challenges of conflict and diversity. This research seeks to contribute to the broader understanding of these complex issues and pave the way for more informed interventions and policies.

2. Theoretical Background of Corruption

2.1 Consequences of corruption

Corruption, a deeply rooted and harmful phenomenon, manifests itself in various forms. It places individuals in situations where they might be tempted or pressured to become involved. It's like standing at a crossroads where you can either choose to either offer bribes to expedite processes and gain unfair advantages or to adhere to ethical principles and potentially face disadvantages due to others engaging in bribery. This phenomenon is not confined to a single facet of society but permeates through various layers and its consequences are far-reaching, casting a shadow over multiple aspects of public life. It sows the seeds of distrust and inefficiency, ultimately impeding progress and development.

One notable facet that corruption distorts is investment. Private investors have to consider the necessity of offering bribes to multiple officials to secure permits and licenses for their projects, resulting in elevated costs and extended project durations. This diminishes the overall appeal of such projects, often leading to the abandonment of potentially profitable ventures that could have been realized without resorting to bribery. The expected negative effect of corruption on the ratio of investment to GDP is shown by multiple empirical evidence **[Brunetti, Kisunko and Weder (1998), Brunetti and Weder (1998), Mauro (1995), Gymiah-Brempong (2002)]**. However, corruption may not only be an obstacle to domestic investors, but also render a country unattractive to foreign investors. A significant body of research has shown that high levels of corruption can deter foreign investors, leading to reduced FDI inflows **[Wei (2000b), Aizenman and Spiegel (2003), Habib and Zurawicki (2001)]**, and consequently, suppressing economic growth. The presence of higher levels and greater unpredictability of corruption acts as an unpredictable and random tax on enterprises, effectively reducing foreign direct investment **[Tanzi(1998)]** and eroding investor confidence in the stability and fairness of the business environment.

Cost-increasing corruption disproportionately impacts small businesses, which struggle to pass on these added expenses in highly competitive markets. Corruption can elevate operational costs for businesses, making it more expensive to operate and conduct business. It's worth noting that small businesses play a crucial role in advancing economic growth across developing countries **[Tanzi(1998)]**. Corruption can result in market distortions, favoring firms with political connections rather than those with superior products or services. Large enterprises employ mechanisms to gain market power by using gifts or bribes disguised as political donations to reduce competition or obtain tax incentives, subsidized credit, and other benefits. Therefore, corruption can foster unfair competition, privileging well-connected firms and obstructing fair market competition.

In summary, corruption can impede innovation, entrepreneurship, and FDI, ultimately hampering economic growth. This is achieved by inflating operational costs and offering preferential treatment to established firms at the expense of newcomers and smaller businesses.

Corruption can worsen income inequality **[Gymiah-Brempong (2002), Gupta, Davoodi and Alonso-Terme (2002)]** and elevate poverty rates, as funds in the form of bribes flow toward the corrupt elite. Bribes are paid to the privileged- who have the power and the means to give the payer something in return- boosting their income while leaving the poor empty-handed. Furthermore, illegal payments occur very often in sectors where the government offers a public good for free or lower than its market value. Corruption diverts public goods from serving all to benefiting those who can pay hefty bribes. As a result, public goods lose their intended purpose and become exclusively accessible to those with the financial means to afford them. Yet, the money follows a different route. The key difference: legal fees benefit the government and community, while bribes enrich civil servants **[Gupta, Davoodi and Alonso-Terme (2002)]**. Expanding upon our prior examination of corruption's effects on small businesses, it is crucial to emphasize how this phenomenon contributes to income inequality. The resultant imbalanced competitive landscape invariably leads to the dominance of larger corporations. As these corporations expand, they amass greater resources and influence, while smaller businesses find themselves stifled and encounter heightened barriers to entry. This dynamic perpetuates an economic environment characterized by the concentration of income and wealth among a select few major individuals, thereby intensifying income inequality, which may lead to social tensions and instability.

Moreover, corruption also decreases expenditures on education **[Gupta, Davoodi and Alonso-Terme (2002), Esty and Porter (2002)]**and health, as corrupt practices can divert funds away from these sectors, the argument being that other expenditures offer public servants better opportunities to collect bribes **[Mauro (1998)]** . **Gupta, Davoodi,** and **Tiongson (2001)** identified a correlation between high corruption levels in countries and the inefficiency of government services. They used the percentage of low-birthweight babies and the child and infant mortality rates as a measure of public healthcare quality and found that in high-corruption countries, child mortality rates are approximately one-third higher and infant mortality rates are nearly double. Additionally, they found that corruption adversely affects the quality of public education, as evidenced by higher student dropout rates.

Esty and Porter (2002) and **Tanzi and Davoodi (1997)** provide significant evidence suggesting over-investment in public infrastructure, as those responsible for allocating resources may find better opportunities to extract illegal income from large investment projects and thus, diverting funds away from social programs and public services. In this context, resources often get channeled into projects that primarily serve the interests of corrupt officials or individuals, rather than addressing the pressing needs of the broader population. This misallocation of resources undermines the overall effectiveness of public spending.

Suppliers of these projects sometimes inflate the prices of goods or services they provide to government or public agencies. Public officials, responsible for awarding contracts and overseeing procurement, may collude with these suppliers to ensure the acceptance of these inflated prices, which are higher than the actual value of the goods or services provided. The inflated amount involved is significantly higher than the actual value of the goods and services provided. This surplus is then divided among the corrupt parties involved, including both suppliers and public officials. These public funds primarily originate from taxes paid by citizens, and individuals contribute these taxes with the expectation that the government will utilize them to provide essential public goods and services like education, healthcare, enhance the quality of life and the well-being of communities, and promote economic development. Instead, these ill-gotten gains are pocketed by corrupt individuals, which results in a direct loss of resources that could have benefited the broader population.

In summary, corruption is associated with a multitude of negative consequences, including low GDP, income inequality, inflation, rising crime rates, policy distortions, bureaucratic inefficiency and a lack of competition. These relationships are complex, with corruption both causing and being a consequence of these issues. This suggests that countries can become trapped in a cycle where corruption perpetuates a range of detrimental effects, further fueling corruption itself.

There is strong evidence that corruption lowers a country's attractiveness to both international and domestic investors, resulting in reduced capital accumulation and inflows. Moreover, corruption undermines the productivity of capital. Additionally, corruption distorts government expenditure and reduces the quality of a wide variety of government services, including public investment, healthcare, tax revenue, and environmental control. This, in turn, substantiates the claim that corruption leads to significant welfare losses.

2.2 Causes of corruption

Corruption stands as the single greatest impediment to both economic and social progress, representing one of the most pressing challenges facing the modern world. Infecting the very core of societies, it obstructs progress and tarnishes the ideals of fairness and justice. In this section, we embark on a journey to unravel the enigma of corruption, seeking to understand the intricate web of factors that perpetuate this issue.

Our mission is clear: to equip individuals, organizations, and governments with the knowledge and insights necessary to confront corruption head-on. By delving into the complex interplay of economic conditions, political systems, and global influences, we strive to demystify the origins and mechanisms of corruption within distinct contexts.

Throughout the upcoming sections, we will conduct a comprehensive analysis of these contributing factors, shining a light on the deep-rooted causes that sustain corruption. This exploration lays the foundation for informed, effective strategies and policies aimed at eradicating corruption and fostering a world where transparency, accountability, and integrity thrive.

Government Involvement/ Government Spending

In the context of government involvement in the economy, "economic control" refers to the degree of influence and authority exerted by the government and its administrative bodies over economic activities. This control encompasses critical decisions regarding the allocation of resources, access to economic opportunities, and their equitable distribution. Notably, individual economic success is shaped not solely by market forces but also by the capacity to influence relevant public officials. Consequently, the role played by government institutions becomes pivotal in molding the level of corruption within a specific context.

Measuring government involvement is a complex task, given the varied approaches adopted by different researchers. Some studies have demonstrated a positive correlation between corruption and redistributive activities, such as government transfers and subsidies, which they use as proxies for government involvement. Conversely, other research has focused on government regulations

as measurements of corruption and concluded that reducing these regulations up to a certain threshold may not necessarily lead to a decrease in corruption. Additionally, some have found that certain forms of governmental activity, particularly those of a regulatory nature, can inadvertently create opportunities for corrupt officials to engage in illegal behavior.

Some studies have used government spending as a proxy for government involvement.The relationship between government expenditure and corruption can be interpreted through two distinct perspectives. On one hand, there is an argument suggesting that a larger government might inadvertently foster more corruption by providing additional opportunities for individuals to engage in rent-seeking behavior, seeking personal gain at the expense of the public interest. Conversely, an alternative perspective posits that a larger government, armed with a substantial budget for law enforcement and oversight, has the potential to be more effective in combating corruption. This viewpoint finds support in a significant body of empirical evidence, with countries that allocate a higher proportion of their resources to governmental expenditures often achieving lower scores on corruption indices.

However, it's important to note that the relationship between government expenditure and corruption is not universally agreed upon. Some researchers have found a positive relationship, suggesting that increased government spending may be associated with higher levels of corruption. Nevertheless, it's essential to consider the potential for reverse causality when examining the link between corruption and government expenditure. Additionally, research has shown that in nations boasting robust democratic systems, an increase in government size can potentially lead to a reduction in corruption. Conversely, the opposite effect may manifest in weak democracies. Other researchers have distinguished between government spending and government involvement. They contend that government intervention has the potential to counteract the reduction in corruption that might accompany a larger government.

In summary, the relationship between government intervention and corruption is complicated, especially due to the various measures employed by different studies.

Competition

Competition is another complex factor that has a significant impact on corruption, but its measurement presents challenges. Research has delved into the extent to

which corruption is influenced by a lack of competition. It's widely accepted that competition tends to reduce the economic benefits associated with various activities, subsequently diminishing the incentive for public officials and politicians to engage in extortion and corruption. An official's ability to offer lucrative protection to a private partner within a domestic market hinges on how open that market is to external competition from imports. Interestingly, corrupt officials may themselves erect barriers to imports.

Ades and Di Tella [1995], employ the 'market dominance' index to measure the extent to which dominance by a limited number of firms negatively affects new business development. Another index, 'anti-trust laws,' assesses the effectiveness of these laws in curbing non-competitive practices. The authors' conclusion is that in less competitive market environments, there tends to be a higher incidence of corruption. This is because such environments provide public servants with incentives to extract a portion of monopoly rents through bribes. However, the authors acknowledge the challenges related to causality and recognize that corruption may provide incentives for politicians to support monopolies. In this case, the lack of competition would result from corruption, not vice versa.

Most scholars have focused on a country's 'openness' as an indicator of competition, with specific metrics, including:

- The ratio of imports to GDP, which serves as an indicator of competition and has shown a negative relationship with corruption.
- Another valid measure of competition within a country is derived from the number of years it has been open to trade.
- Other researchers employ globalization or economic freedom as indicators of freer trade, which is associated with increased competition.
- In contrast, some rely on measures of trade restrictions or barriers to demonstrate a positive relationship with corruption.
- Lower tariffs or non-tariff barriers to imports have been used as measurements. Some argue that uniform trade tariffs reduce corruption by limiting opportunities for public officials to extract bribes from importers. When tariff rates differ significantly among goods, customs officials might demand bribes to classify goods into lower-taxed categories or threaten to grade them up.
- Some researchers argue that membership in international organizations, and higher international integration can reduce corruption in two ways. Firstly, it increases costs as countries with strong economic connections compete. Expected bribes are akin to taxes, adding to local producers' costs. Hence, countries with widespread corruption may struggle to

compete due to higher costs. Secondly, international organizations, dominated by industrialized countries with anti-corruption norms, encourage adopting these standards. Higher involvement in international trade pressures a country's government to provide favorable conditions for foreign companies and combat corruption.

In conclusion, openness to trade fosters competition, which in turn influences corruption in two significant ways. Firstly, heightened competition makes it increasingly challenging to conceal corrupt payments since competitors may uncover illicit activities, thereby elevating the risk of detection. Secondly, within a competitive market, the presence of bribes undermines a company's competitive edge, illustrating how competition plays a pivotal role in diminishing corruption.

Income Inequality

Studies seek to explore the intricate relationship between income inequality and corruption. As the wealth gap widens between affluent individuals and those less fortunate, corruption tends to increase. This surge in corruption can be attributed to a couple of key factors. The wealthy, equipped with greater financial resources and influence, find themselves both more motivated and better positioned to engage in corrupt practices. They may wield excessive control over institutions, resulting in weakened enforcement of anti-corruption measures and fostering an environment conducive to corruption. Meanwhile, individuals with fewer resources become increasingly vulnerable to corrupt activities, as they lack the means to resist or report such misconduct.

Furthermore, income inequality has a detrimental impact on societal norms related to corruption and people's beliefs about the legitimacy of rules and institutions. This can lead to a troubling shift, making corruption appear more acceptable. As income inequality grows, some individuals may even come to view corruption as a justifiable means of achieving economic or social advancement.

From the above, the prevailing theory suggests that as income inequality grows, corruption tends to rise in tandem. This correlation underscores the vital importance of addressing income inequality as an integral part of a comprehensive strategy to combat corruption in societies.

However, it's essential to acknowledge the complexity of this relationship. Research findings can vary, with some studies indicating a positive relationship between income inequality and corruption, while others do not find statistical

significance. These variations can be attributed to factors such as the specific context of the study, the measures employed, and the statistical methods used. The issue of causality also poses a significant challenge. It's challenging to determine whether income inequality leads to corruption, corruption leads to income inequality, or if both dynamics interact in a complex manner, potentially creating a vicious circle. In practice, corruption can exacerbate income inequality by allowing a select few to accumulate disproportionate wealth and resources. Conversely, high levels of income inequality can create fertile ground for corruption, as those with economic power may exploit it to maintain their advantages. Hence, it is crucial to approach these intertwined issues with caution in research and policymaking, considering their complex and multifaceted nature.

Democracy

An important factor frequently examined in corruption studies is democracy. Democracy encompasses a set of principles and practices that shape a nation's institutions, safeguarding individual freedoms. Its fundamental elements include (a) government formulation where the majority prevails, (b) the presence of free and fair elections, and (c) the protection of minorities and respect for basic human rights [Laza Kekic, 2007]. The core notion is that in a democratic country, the ability to vote government officials out of office acts as a deterrent against corrupt activities. The theory suggests that corruption tends to be lower in democratic nations. However, the relationship is more intricate than that.

Several studies have found no significant connection between democracy and corruption, or this connection lost its significance when controlling for other variables. Therefore, some researchers shift their focus from the contemporary state of democracy to its stability and the duration of exposure to it. In young democracies, corruption may initially rise because they lack the means to effectively control such activities, making rent-seeking behavior more attractive. However, as democracy matures and institutions for monitoring and combating corruption improve over time, the costs of rent-seeking increase. Faced with these developments, rent-seeking loses its allure and diminishes. While the current degree of democracy may not significantly impact corruption, a prolonged period of exposure to democracy, particularly between 10 to 45 years of uninterrupted democracy, reduces corruption. They posit that in the early years of democracy, democratic norms may be weak or in their initial stages. Empirical results tend to support the idea that long-standing democracies experience lower levels of corruption.

Salary of public officials

The salary of public officials is a factor that significantly affects corruption dynamics. According to research, low salaries can incentivize public servants to seek extra income through illicit means, while high salaries may deter corrupt behavior due to the increased potential losses if caught. This leads to the prevailing theory that civil service wages have a negative impact on corruption levels. However, it's important to recognize the complexity of causality in this relationship. Corrupt countries may argue that civil servants already earn enough through corruption, leading to reductions in civil service pay.

Additionally, the salary level of civil servants can influence their susceptibility to bribes. Higher salaries may reduce the likelihood of engaging in corrupt activities, but an opposing perspective suggests that higher salaries might bolster an official's negotiating power, potentially resulting in higher bribe demands.

Some studies take different approaches, such as comparing public officials' salaries to those in the manufacturing sector, the private sector, or the average wage. If a bureaucrat decides to accept bribes and is subsequently exposed, they may lose their position and be compelled to transition to the private sector. In such cases, higher wages in the public sector compared to the private sector could lead to greater expected losses from job loss, thereby reducing the incentives for corrupt activities—provided there is effective monitoring.

Another facet of the relationship between corruption and salary pertains to the government's ability to control corrupt activities effectively. In some cases, corruption can thrive not just because public officials seek to supplement their incomes but because the agencies, institutions, and government itself struggle to enforce anti-corruption measures due to underpaid officials. This challenge is particularly pronounced in developing countries that lack the necessary tax revenue to adequately compensate local officials. Consequently, corruption can persist and even escalate when insufficient resources are allocated to tackle this issue.

Gender

Numerous studies indicate that women are less likely to engage in bribery and less inclined to tolerate corrupt practices. This tendency is often attributed to

women's characteristics, such as being sensitive, honest, less selfish, and forward-thinking in understanding the consequences of their actions. If these findings hold true in real-life scenarios, it suggests that countries with a substantial presence of women in the labor force, parliament, and public roles may witness reduced levels of opportunistic behavior that harms the public interest.

While the majority of studies support the notion that women are more reliable and less prone to corruption than men, there are complexities to consider. Some studies reveal a negative correlation between women's participation in the public sector and corruption. However, there may be selection biases in the data due to fewer women in the labor force and parliament, and these women often come from the " better" part of the female population.

Additionally, the influence of female representation in government on reducing corruption may diminish when controlling for factors like a liberal constitution, freedom of the press, and the rule of law. In such cases, it appears that it's not merely the presence of women but rather liberal democratic structures and ideologies that promote fairer and more honest behavior, thus facilitating women's participation in various sectors.

Furthermore, studies suggest that in societies where women have limited opportunities for social participation, corruption tends to be more prevalent. This highlights the importance of addressing not only gender political representation but also the social institutions that may restrict women's involvement, which can significantly influence a society's functioning and its level of corruption.

Researchers have utilized a range of metrics to investigate the connection between gender and corruption, encompassing gender inequality indices and Hofstede's cultural dimensions, including the masculinity-femininity index. In this framework, masculinity signifies a societal inclination towards achievement, heroism, assertiveness, and the pursuit of material rewards for success, while femininity represents a preference for cooperation, modesty, caring for the weak, and enhancing overall quality of life.

However, it is clear that while women's participation can play a role in reducing corruption, the relationship between gender and corruption is complex and subject to various contextual factors, making it essential to consider a holistic strategy when addressing this pressing issue.

Natural resources

In theory, abundant natural resources should drive positive development by boosting trade and investment, thereby enhancing living standards. However, the "resource curse" perspective offers a counterargument. When a country possesses substantial natural resources, it can hinder its development in several ways, primarily by increasing corruption.

The resource curse theory suggests that the sudden wealth generated by resource extraction, such as oil or mineral exports, can result in higher corruption levels in countries heavily reliant on these resources because of rent- seeking behaviors by the political elite and government officials. Also resource-rich nations may overly rely on resource revenues, leading to reduced investment in other crucial areas such as human capital, education, and infrastructure. This lack of diversification can contribute to an environment where corruption thrives.

However, the relationship between natural resources and corruption becomes multifaceted when considering factors like development and the uninterrupted presence of democracy. This complexity arises because many countries heavily reliant on raw materials exports are, in fact, poorer nations, and poverty itself can be a contributing factor to higher corruption levels. Additionally, the centralization of economic power resulting from dependence on raw materials exports may undermine democratic stability, which can further exacerbate issues related to corruption.

Some argue that natural resources only increase corruption in the absence of strong democratic institutions. In resource-rich countries with robust democratic institutions, officials can be held accountable for malfeasance, counteracting the trend.

In conclusion, when a country discovers rich supplies of natural resources, strong institutions are necessary to prevent the rise of corruption. This highlights the critical role that governance and democracy play, in managing the potential negative effects of resource abundance.

Press freedom

The freedom of speech and press in democratic states plays a crucial role in enabling citizens to scrutinize government actions, uncover information, expose abuses of power, question authority, demand accountability, and share their findings. Effective monitoring is essential to deter officials from engaging in corrupt behavior. In essence, free and independent media serves as a cornerstone

of national integrity and good governance, contributing significantly to the fight against corruption.

Most studies support the theory that a free press reduces corruption. Some suggest that the wide circulation of newspapers in a country can act as a deterrent to corruption, particularly when the press is free. Concerns about reversed causality, where a corrupt government limits press freedom, have been addressed by studies, showing that press freedom consistently lowers corruption levels, even when using different measures for corruption and freedom of the press. However, others argue that the impact of press freedom on corruption might be overstated, as it is just one facet of countries with high-quality institutions and wealth and may not solely affect corruption.

In conclusion, the evidence suggests that a free press is a crucial tool in the fight against corruption, helping to promote transparency, accountability, and good governance. It is vital to consider it as an essential factor when addressing corruption and its impact on society.

Income

Economic development is often seen as a key factor in reducing corruption. It increases the likelihood of detecting and punishing corrupt practices, which discourages dishonesty among government officials. Most studies exploring the causes of corruption have found a significant negative relationship between corruption and income. However, it's important to recognize that the relationship between economic development and corruption is complex. Corruption can also impede economic progress by diverting resources away from productive uses, discouraging foreign investment, and eroding trust in institutions. Furthermore, studies have shown that as corruption is progressively reduced, there's a point where further efforts become increasingly costly. Removing the last traces of corruption is much more challenging and expensive than addressing initial instances.

In conclusion, income level is a crucial factor in understanding and combating corruption, and it should be considered in any comprehensive study examining the drivers of corruption.

Education

The relationship between education and corruption is complex and can vary depending on the context. In general, it is expected that citizens with higher socioeconomic status and education levels will be more likely to closely monitor the government and increase the probability that corrupt public officials will be exposed. Education, also often provides individuals with a better understanding of ethical principles and civil behavior.
While most studies have found a negative relationship between education and corruption, indicating that higher education levels are associated with lower corruption, there are exceptions. In some studies, the coefficient of education was significant but had a positive sign, suggesting a positive correlation between education and corruption. This unexpected finding was explained by the fact that in some developing countries, the public sector is the primary source of employment. In these countries, corruption within the public sector is prevalent, and obtaining employment in government departments often requires a certain level of education. Consequently, the level of corruption in these countries may increase with higher education levels, particularly when education becomes the primary pathway to public sector employment.

In conclusion, the relationship between education and corruption is not always straightforward, and caution is needed when exploring this connection, especially in contexts where the public sector is a significant source of employment.

Culture

The influence of culture on corruption has become an increasingly significant subject of investigation. Culture, which encompasses a society's shared values, beliefs, and traditions, profoundly shapes how individuals behave and approach corrupt practices. To explore these cultural determinants, scholars often refer to Hofstede's dimensions, which encompass masculinity versus femininity, long-term orientation versus short-term orientation, individualism versus collectivism, power distance, and uncertainty avoidance. These dimensions provide valuable insights into how societal values and ideologies can impact the levels of corruption within a given context.

- Long-Term vs. Short-Term Orientation: This dimension emphasizes perseverance and future-oriented values. In societies with a long-term orientation, corruption may be influenced by a strong commitment to achieving future virtue. Conversely, in short-term-oriented cultures, individuals may seek immediate gains, potentially leading to corrupt practices.

- Individualism vs. Collectivism: Collectivist societies prioritize group interests over individual interests, often based on unquestioning loyalty. In such cultures, people may be more inclined to engage in corrupt acts to support their groups. Studies suggest that less individualistic (more collectivist) societies tend to have higher levels of corruption.

- Uncertainty Avoidance: This dimension measures a society's tolerance for ambiguity and uncertainty. In societies with high uncertainty avoidance, corruption might be viewed as a means to reduce uncertainty and obtain more predictable outcomes, potentially driving corruption levels.

- Masculinity vs. Femininity: This dimension reflects a society's approach to gender roles and values. In cultures characterized by masculinity, there is an emphasis on achievement, heroism, assertiveness, and the pursuit of material rewards for success. In contrast, feminine cultures prioritize cooperation, modesty, caring for the weak, and the overall quality of life. In societies with high masculinity, the pursuit of personal gain and material rewards may contribute to higher levels of corruption.

- Power Distance: Power distance measures how accepting less powerful members of society are of unequal power distribution. In cultures with high power distance, where hierarchical orders and unequal power are accepted, corruption may occur due to nepotism and favoritism, as superiors provide favors to subordinates in return for loyalty.

In summary, the analysis of cultural determinants indicates that corruption is influenced by societal values, ideologies, and the degree of acceptance of certain cultural traits. Understanding these dimensions provides valuable insights into the underlying causes of corruption within specific contexts, enabling more targeted anti-corruption strategies.

In light of our earlier discussions, it is evident that various factors can significantly impact corruption levels. Some other essential aspects to consider when examining corruption, as indicated by studies, include historical colonial legacies, federal structures of government, urbanization, the presence of war, political stability, government effectiveness, the rule of law, the risk of expropriation, regulatory quality, and voice and accountability. In summary, corruption is a widespread and harmful issue that hampers societal progress, economic growth, and overall well-being. While understanding its numerous causes is crucial for effective countermeasures, this is a challenging task due to the intricate and bidirectional nature of corruption, where what affects corruption can also be influenced by it. Nonetheless, addressing corruption is of paramount importance. Despite its complexity, efforts to combat corruption must persist as an urgent priority. By continually researching and analyzing the factors that drive corruption, we can develop tailored strategies and policies to minimize its impact, leading to fairer societies

3. Literature Review on the Relationship Between Religion and Corruption

While economists have extensively explored the various determinants of corruption, including economic, political, and institutional factors, the influence of religion has garnered increasing attention in recent years. Religion is deeply ingrained in societies and has a significant impact on people's beliefs and behaviors. It can either discourage or facilitate corrupt practices. This subsector delves into the intricate relationship between religion and corruption, examining how religious teachings and beliefs can shape individuals' propensity for corruption. By gaining insights into these dynamics, we aim to inform more effective anti-corruption strategies that take into account the religious factors at play in different societies.

Several researchers have proposed that religion influences corrupt actions by shaping cultural attitudes toward social hierarchy and government malfeasance **[Dreher, Kotsogiannis & McCorriston (2007), Lambsdorff (2006)]**. Religious beliefs have a known influence on a broad spectrum of individual behaviors. An individual's notions of what constitutes correct behavior and the potential consequences of deviating from it are significantly molded by their religious beliefs. Church doctrines provide guidance to individuals about the rewards that "do-gooders" will receive in heaven and the penalties that "evildoers" will face in hell. Consequently, religion plays a critical role in enforcing moral behavior and establishing a moral order within society. From the perspective of morality and religious culture, corruption is considered unacceptable due to its association with theft, dishonesty, abuse, and illegality. Therefore, it is posited that religious heritage may wield a substantial influence in deterring public officials from engaging in corrupt activities, ultimately leading to a reduction in bureaucratic corruption. However, it's worth noting that in societies that are more religious, there appears to be a tendency to distance themselves from questioning authorities or involving themselves in politics. This distancing allows those in power to use their positions to embezzle resources, which can counteract the potential reduction in corruption due to religious influences. In such cases, while religious beliefs may instill moral values and discourage corrupt behavior among individuals, the reluctance to engage in political scrutiny or activism can inadvertently create an environment where corrupt practices persist unchecked.

This highlights the complexity of the relationship between religion and corruption, as religious influence can have both positive and negative effects on the prevalence of corruption within a society. Therefore, the impact of religiosity on corruption is contingent not only on individuals' moral compass but also on their willingness to actively participate in governance and oversight.

Numerous researchers have explored the role of religion in corruption levels. **Treisman(2000)** found a significant negative correlation between the percentage of Protestants in a country's population and the level of corruption. This connection remained robust even after accounting for economic factors like GDP per capita. **Lambsdorff (2006)**, **Serra (2006)**, **Chang-Golden (2004)**, **Herzfeld-Weiss (2003)**, **Brian Hamm (2013), Gerring-Thacker (2005)**, **Mensah (2014)**, **Sommer, Bloom & Arikan (2015)**, **Chan et al.(2021)** and **Ghaniy-Hastiadi (2017)** have noted that countries with a significant proportion of Protestants are perceived to experience lower levels of corruption. Similarly, **Serra (2006)** discovered that Protestantism is linked to reduced tolerance for and lower levels of corruption. Therefore, it is reasonable to anticipate that regions with a substantial Protestant population would exhibit lower corruption levels. **Xu et al. (2017)** found that Taoism and Buddhism have a stronger anti-corruption effect in China compared to Christianity and Islam, with Buddhism exhibiting a notably stronger influence than Taoism.

Paldam(2001) views religion as a proxy of culture and explores the connection between corruption and religion. He categorized different religious groups into 11 categories, divided Christianity into two categories, and tested their impact on corruption while also considering other variables. He found that a large presence of Reform Christianity (Protestants and Anglicans) and Tribal religions tended to be associated with lower corruption. In contrast, countries influenced by Pre-Reform Christianity, Islam, Buddhism, and Hinduism generally had higher corruption levels. However, the impact is only significant for Reform Christians, indicating that these religious groups played a more prominent role in mitigating corruption compared to others. These findings underscore the potential influence of religious composition on societal values and behaviors related to corruption.

Valdovinos-Hernandez et al. (2019), **Brian Hamm (2013)** and **Sandholtz and Gray (2003)** both identified a positive correlation between the percentage of Catholics and the level of corruption. **Sandholtz and Gray (2003)** proposed that religions are remnants of colonial legacies, and it is these legacies, rather than the religions themselves, that are the underlying cause of the relationship between religion and corruption. **Valdovinos-Hernandez et al. (2019)** offer two

explanations for this correlation. First, they suggest a historical connection, noting that many now-developing nations were former colonies of European empires like Spain, where most indigenous peoples were Christianized and became part of the Catholic Church. Consequently, when these former colonies gained independence, Catholicism became the dominant religion in many developing states. On the other hand, Catholic-majority states in the developed world, such as Spain and Italy, also tend to have higher corruption scores than their Protestant-majority counterparts. The second explanation focuses on the spiritual guidance provided by the Catholic denomination. According to Catholic faith, people are seen as inherently sinful and prone to temptation **[Lipset and Lenz (2000)**, **Harrison and Huntington (2000)]**. This perspective doesn't necessarily mean that Catholics are more corrupt than others, but it suggests that they may perceive themselves as more susceptible to corruption. Therefore, it's not surprising that they tend to score higher on self-reported corruption scales.

Valdovinos-Hernandez et al. (2019) also assumed that religion serves as a moral compass, helping individuals differentiate between acceptable and unacceptable behavior. This hypothesis led them to anticipate that a higher concentration of nonbelievers in a population would correspond to increased corruption levels. However, the surprising finding was that non-believers had a statistically significant negative impact on corruption, contrary to their expectations. They suggested that non-believers base their decisions on universal values not influenced by any specific religion, suggesting they may not be inherently amoral as initially presumed and may reject corruption as a negative practice. It's essential to acknowledge that this classification also encompasses survey participants who chose not to disclose their religion, potentially introducing bias into this measurement.

Beets(2007) presents two hypotheses. The first hypothesis suggests that committed religious adherents abstain from corruption due to the inherent theft, dishonesty, illegality, and harm to others. The second hypothesis suggests that those who are less devoted to religious faith are more inclined to engage in corruption due to the absence of religious guidance. However, the influence of religion on corruption appears to be more intricate than these two assumptions, as many of the most corrupt countries in the world also rank highly in terms of religiosity **[Marquette (2012), Beets (2007)]**. Consequently, he found that citizens of countries perceived as having lower corruption tend to assign less importance to religion, enjoy greater religious freedom, possess a relatively high GDP per capita, have a higher proportion of Christian citizens, and a lower proportion of Muslim citizens. **Beets (2007)** provides one possible explanation

for why citizens of nations that place greater importance on religion tend to have higher levels of corruption. He argues that in poorer countries plagued by widespread corruption, the suffering experienced by victims of corruption may lead them to seek solace in their religious beliefs. In contrast, in more affluent nations where most citizens have their basic needs met and enjoy greater prosperity, the perceived need for religion may be diminished. Certainly, there are alternative explanations to consider. Some research suggests, for instance, that religion in these nations may promote characteristics like loyalty and a disposition to defer to authority figures, both of which could potentially hinder efforts to combat corruption. These observations may reflect broader cultural norms that highly prioritize hierarchy and structured systems, as observed in family dynamics, schools, the work place and other aspects of society.

The hierarchical religion model, initially proposed by **Putnam et al. (1993)** and subsequently embraced by scholars like **La Porta et al. (1997)**, **Treisman (2000)**, and **You & Khagram (2005)**, serves as a significant framework for understanding the connection between religion and corruption. It is widely argued that hierarchical religions tend to foster a greater respect for social hierarchies, resulting in obedience to authority figures and a higher tolerance for government abuse of power and corrupt practices **[Elbahnasawy and Revier (2012), Ko and Moon (2014)]**. This obedience is particularly pronounced in countries where religion is state-sponsored, and there is a blurred boundary between religion and state. State-sponsored hierarchical religions may not actively monitor and denounce abuses of public office **[Putnam et al. (1993), Treisman (2000)],** as vigorously as individualistic religions, such as Protestantism. This phenomenon is attributed to the principle of the separation of church and state, notably emphasized in Protestantism, facilitates the development of a civil society capable of effectively monitoring governmental actions **[Treisman (2000)]**. Additionally, Protestantism is suggested to decrease corruption partly due to its alignment with individualistic rather than familistic relationships **[Lipset and Lenz (2000)]** and because countries where Protestantism is dominant, tend to exhibit lower reliance on government, and less tolerance for misbehavior by public servants **[You & Khagram (2005)]**. As a result, a higher proportion of hierarchical religions within a population, is believed to have a positive influence on a country's corruption level. Conversely, religions that promote egalitarianism or individualism, as indicated by **Ko and Moon (2014)**, are associated with lower corruption levels.

La Porta et al., (1997) conducted a study that revealed a positive correlation between the percentage of the population belonging to hierarchical religions (such as Catholicism, Eastern Orthodoxy, and Islam) and higher levels of

corruption. They suggest that this connection may be attributed to the reduced civic engagement within these religious communities, where individuals tend to rely more on religious authorities and institutions for guidance and decision-making. As a result, there might be fewer efforts to actively participate in their communities, engage in local government, social activities, or monitor and advocate against corruption, all of which are factors typically associated with reducing corrupt practices. However, when this relationship is analyzed for a larger section of countries **[La Porta et al., (1999)]**, the strength of this relationship diminishes considerably, particularly when GDP per capita is taken into account.

La Porta et al. (1997) also observed that strong hierarchical religions like Catholicism, Orthodox Christianity, and Islam tend to discourage the formation of trust, thus promoting corrupt acts by reducing cooperation among bureaucrats and private citizens. Similarly, **Lambsdorff (2006)** argues that countries with higher levels of generalized trust, lower acceptance of hierarchy, and a larger proportion of Protestants in their population tend to experience lower levels of corruption. However, **Ko and Moon (2014)** cannot definitively conclude that adherents of hierarchical religions like Catholics and Muslims exhibit statistically significant and substantially lower levels of trust than followers of individualistic religions such as Protestants. **Ko and Moon (2014)** also suggest that the general assumption that Protestants are less obedient to authority and less reliant on government than believers in hierarchical religions warrants further critical examination.

In conclusion, religious traditions exert a significant influence on cultural attitudes concerning social hierarchies, family values, interactions between religious institutions and the government, and the degree of societal vigilance. These cultural factors play a crucial role in shaping a population's inclination towards either accepting or opposing corruption **Treisman (2000)**.

Scholars, including **Flavin and Ledet (2008)**, discuss the challenge of measuring religiosity accurately due to disagreements on how to quantify an individual's religious belief and devotion. Many studies use the dominant religion in a country as a measure, but this approach assumes strict adherence to religious rules without considering variations in individual commitment levels. Neglecting to investigate the level of adherence to a religion can significantly affect the overall conclusions drawn from such studies. **Gatti, Paternostro, and Rigolini (2003)**, using data from the World Value Survey, discovered a negative association between regular church attendance -which serves as a measure of religiosity- and the acceptance

of corruption. **Gouda and Park (2015)** developed a weighted index to measure religiosity based on four questions taken from the World Value Survey:

1. "How important is religion in your life?"
2. "Apart from weddings, funerals, and christenings, about how often do you attend religious services these days?"
3. "Independently of whether you go to church or not, would you say you are a religious person?"
4. "How important is God in your life?"

Their findings indicate that there is a negative and statistically significant effect of religiosity on the acceptance of corruption at the individual level, but this effect is relatively small. They also discovered a threshold value of religiosity below which individuals are more likely to accept corruption. Essentially, individuals with minimal religiosity are less constrained by religious norms and are more inclined to accept corruption. Religiosity, therefore, reduces the acceptance of corruption when it surpasses a certain threshold for a particular individual possibly because there is a greater probability that their actions are influenced by religious beliefs and values. The small effect of religiosity on corruption is attributed to the fact that it influences the acceptance of corruption through various and sometimes opposing channels.

North (1990) and **Williamson (2000)** emphasize the significance of optimizing informal institutions, such as religious institutions, which have a critical impact on formal systems. **Xu et al. (2017)** demonstrates that the negative relationship between religion and corruption is weaker in provinces in China where law enforcement is stronger. According to them, this finding aligns with the idea that in regions where formal legal systems are incomplete and external monitoring mechanisms are still in development, societies may place greater reliance on informal sources of power, such as religious culture, as an important alternative mechanism for reducing unethical behavior and addressing corruption. In contrast, **Makmur (2020)** found that religiosity cannot serve as an alternative mechanism for preventing corruption in Indonesia, primarily due to the weaker negative relationship between religion and corruption among individuals who had experienced being requested by an official to make illicit payments. **Ugwuoke (2018)** found that in regions with weak institutions such as Rule of Law, Government effectiveness, and Regulatory quality, being more religious tends to lead to higher corruption levels. Conversely, in areas with strong institutions, religiosity tends to reduce corruption. Thus, the influence of religiosity on corruption in Africa depends on the strength of the institutions in a given environment. Similar, **Sommer, Bloom, and Arikan (2013)** found that religious

freedom and religious cues have a tendency to reduce corruption only in democratic environments.

Kuran (2004) highlights that prior research often neglects to consider whether individuals' attitudes toward corruption are influenced by the dominance of their religion in their country or their minority group status. **Tunali and Weill (2020)** provide insights into this by finding that Catholics can exhibit varying levels of tolerance toward corruption. They are more tolerant when they constitute the majority and less tolerant when they are in the minority. Conversely, Orthodox Christians display the opposite trend. However, for Islam, the results remain consistent, irrespective of whether it is the majority or minority religion. In summary, the status of a minority religion appears to influence individuals' attitudes toward corruption, but the direction of this influence varies among hierarchical Christian religions.

The influence of religion on corruption is a topic of significant debate in research. Scholars such as **North, Orman, and Gwin (2013)** and **Gokcekus (2009)** argue that the impact of religion on corruption may be a gradual process, becoming evident over centuries rather than in shorter timeframes. According to this perspective, religious values and teachings require an extended period to permeate societal norms and effectively deter corrupt behaviors. In contrast, studies conducted by **Shadabi (2013)** and **Shabbir & Anwar (2007)** did not find significant evidence of a relationship between corruption and religion. Conversely, researchers like **Chase (2014)**, **Makmur (2020)**, **Zuhaira & Ye-zhuang (2017)**, **Weaver & Agle (2002)**, **Longenecker, McKinney, & Moore (2004)**, and **Conroy and Emerson (2004)** have presented findings indicating that higher levels of religiosity tend to correspond with reduced corruption levels. Previous studies by **Miller & Hoffmann (1995)** and **Osoba (2003)** have also demonstrated a positive correlation between risk aversion and an individual's religiosity. It's important to note that engaging in corrupt activities carries significant risks, despite the potential for substantial illicit gains. Therefore, from a risk-averse perspective, religious beliefs may contribute to a public official's reluctance to participate in risky corrupt transactions. Consequently, the authors hypothesize that religion is negatively associated with bureaucratic corruption, a hypothesis that their research substantiates. These divergent findings highlight the complexity of the subject matter, where multiple factors may interplay. It is noteworthy that each of these research endeavors employs different measures and

methodologies, further emphasizing the need for comprehensive and context-specific examinations to unravel the intricate dynamics between religion and corruption.

As previously discussed, religion encompasses a fundamental set of beliefs and practices agreed upon by a group of individuals. These beliefs encompass notions regarding the cause, nature, and purpose of the universe, often accompanied by devotional and ritual observances. Corruption, on the other hand, involves susceptibility to bribery, dishonesty, and immoral conduct. It is reasonable to speculate that countries with a predominantly single religious following may exhibit lower levels of corruption. This inclination arises from the premise that a lack of religious diversity fosters a more homogeneous and often tightly-knit community. Such closely-knit communities typically experience reduced corruption rates as citizens are inclined to assist and watch out for one another **Samanta (2014)** . Conversely, in heterogeneous and fragmented societies, the likelihood of economic agents receiving equal and fair treatment diminishes, leading to increased corruption in highly fragmented communities. However, **Paldam's (2001)** research suggests an alternative viewpoint, proposing that extensive religious diversity within a country may actually decrease corruption levels. **Dincer (2008)** delves into this intricacy by employing polarization as an indicator of conflict and fractionalization as a measure of diversity. His research investigates how these factors relate to corruption across 48 states in the USA. The empirical findings reveal an interesting pattern: while religious polarization exhibits a linear and positive impact on corruption, the relationship between religious fractionalization and corruption follows an inverse U-shaped pattern. In essence, religious fractionalization initially correlates positively with corruption until reaching a specific point, after which the relationship turns negative. Thus, these findings suggest that corruption is less likely to be observed in strongly and weakly fractionalized societies.

In light of these intricate dynamics, we are planning to replicate and expand upon Dincer's research by conducting a comprehensive study that explores the relationship between religious polarization, fractionalization, and corruption in more recent years. Our aim is to provide fresh insights into how these factors interact and influence corruption trends in the contemporary context.

4. Methodology and Data

I analyze the impact of both ethnic and religious diversity on corruption using data from 49 contiguous US states. Initially, my dataset included data from all 51 states. However, two states from my analysis have been excluded, due to the presence of outliers in the dependent variable.

I employ the same measurement for corruption as used by Dincer in his research. Corruption is quantified as the number of government officials convicted of corruption-related crimes per 100,000 individuals within a state, drawing from data presented in the Justice Department's "Report to Congress on the Activities and Operations of the Public Integrity Section". It's worth noting that a similar dataset has been consistently adopted in various empirical studies, such as those conducted by **Goel and Rich (1989)**, **Fisman and Gatti (2002)**, **Fredriksson et al. (2003)**, and **Glaeser & Saks (2004)**, to assess corruption levels across states. The utilization of data from U.S. states offers several advantages, aligning with the approach employed by Dincer in his research. This choice is grounded in the rationale that corruption data and measures of ethnic and religious diversity exhibit greater comparability when applied within the context of U.S. states, as opposed to being applied across diverse countries and regions. In this study, however, I focus on a more recent timeframe, utilizing 10-year averages spanning 2000–2009 and 2010–2019, which contrasts with the earlier periods of 1980–1989 and 1990–1999 utilized by Dincer in his research. This temporal shift allows for the examination of corruption trends in contemporary settings.

To gauge ethnic and religious diversity, two distinct indices are applied: the fractionalization index (*FI*) and the polarization index (*PI*). *FI* is computed as follows:

$$FI_i = 1 - \sum_{j=1}^{J} n_{ij}^2$$

where *nij* represents the population share of religious group *j* in the state *i*. This index measures the probability of two randomly selected individuals in a society belonging to different ethnic or religious groups, with its maximum value achieved when each individual in the society belongs to a unique group.

In contrast, *PI* is calculated using the formula:

$$PI_i = 1 - \sum_{j=1} \left[\frac{0.5 - n_{ij}}{0.5}\right]^2 n_{ij}$$

PI attains its highest value when there are two ethnic or religious groups of equal size within a country.

The data utilized for the computation of ethnic polarization and fractionalization indices (EPI and EFI) is sourced from the Census Bureau and covers the years 2000 and 2010. This data encompasses six distinct ethnic groups: Hispanics, Whites, Blacks, American Indian and Eskimos, Asians, and Others.

Similarly, the data employed for calculating religious polarization and fractionalization (*RPI* and *RFI*) indices is obtained from the American Religion Data Archive for the corresponding years of 2000 and 2010. This dataset is meticulously compiled by representatives of the Association of Statisticians of American Religious Bodies. It furnishes comprehensive information pertaining to 149 religious bodies in the year 2000 and 236 religious bodies in the year 2010. In contrast, Dincer's research relied on a different dataset, specifically from the years 1980 and 1990.

The adherent totals of the religious groups in both 1980 and 1990, as Dincer found, accounted for nearly 50% of the total population. Similarly, in 2000 and 2010, these religious groups represented 50.2% and 48.8% of the total population, respectively, underscoring the enduring pattern of religious adherence observed by Dincer.

In contrast to Dincer's approach, where certain religious bodies were excluded if not covered in both time periods and data on religious groups like Muslims and Hindus were omitted due to their estimated population of less than 1%, I made the choice not to exclude any religious bodies and retained data related to all religious groups. I believe that retaining information on all religious groups is crucial for a comprehensive analysis.

I included a set of control variables in my regressions to mitigate omitted variable bias, following a similar approach as Dincer. These control variables encompass data related to the share of the population aged 25 and over who completed at least high school. However, there is a difference in the timeframes of the data used: I employed data for 2000 and 2010, whereas Dincer's research relied on data from 1980 and 1990 for this variable. Additionally, my analysis utilized data for the share of manufacturing employment and median income for the years 2009 and 2019, in contrast to Dincer's use of data for 1989 and 1999.

It's important to highlight that, like Dincer, I sourced data for education and median income from the Census Bureau. In alignment with Dincer's methodology, data on manufacturing employment was obtained from the Bureau of Labor Statistics.

5. Comparison with Key Prior Research

I am following Dincer's approach in this regard, as he also highlights the importance of considering both the polarization index (*PI*) and the fractionalization index (*FI*) when studying the relationship between diversity and corruption. While *FI* increases with the number of ethnic or religious groups, *PI* reaches its maximum when there are two groups of equal size. Dincer emphasizes that the relationship between *PI* and corruption may differ from that between *FI* and corruption.

Dincer's argument aligns with the idea that ethnocentric behavior may not be observed in strongly or weakly fractionalized societies, as suggested by **Montalvo and Reynal-Querol (2005)**. Consequently, there may exist an inverse-U-shaped relationship between *FI* and corruption, even if there is a linear relationship between *PI* and corruption. Therefore, to comprehensively analyze the effects of diversity on corruption, I consider both indices. The models that I estimate are as follows:

Polarization

$$Corruption_{st} = Intercept + \beta_1 EPI_{st} + \beta_2 X_{st} + \varepsilon_{st}$$
$$Corruption_{st} = Intercept + \beta_1 RPI_{st} + \beta_2 X_{st} + \varepsilon_{st}$$
$$Corruption_{st} = Intercept + \beta_1 EPI_{st} + \beta_2 RPI_{st} + \beta_3 X_{st} + \varepsilon_{st}$$

Fractionalization

$$Corruption_{st} = Intercept + \beta_1 EFI_{st} + \beta_2 EFI_{st}^2 + \beta_3 X_{st} + \varepsilon_{st}$$
$$Corruption_{st} = Intercept + \beta_1 RFI_{st} + \beta_2 RFI_{st}^2 + \beta_3 X_{st} + \varepsilon_{st}$$
$$Corruption_{st} = Intercept + \beta_1 EFI_{st} + \beta_2 EFI_{st}^2 + \beta_3 RFI_{st} + \beta_4 RFI_{st}^2 + \beta_5 X_{st} + \varepsilon_{st}$$

Here, Corruption_st represents the number of convictions in state *s* during period *t*, while *Xst* represents the set of control variables (Education, Manufacture, and Income), including the time and region dummies, which influence corruption.

The results are presented across three distinct specifications, each capturing varying dimensions of the analysis. Specification I represents a pooled OLS approach, which does not account for state and time dimensions. Specification II incorporates fixed effects, focusing solely on the state dimension. In contrast, Specification III extends the fixed effects to encompass both state and time dimensions. In the subsequent discussions and tables, these specifications are referenced as I, II, and III, respectively.

5.1 Ethnic & Religious Polarization

Table 1:Ethnic and religious polarization

	EPI			RPI			EPI & RPI		
	I	II	III	I	II	III	I	II	III
Education	-0.010	-0.018	-0.016	-0.010	-0.024	-0.020	-0.009	-0.025	-0.021
	(0.009)	(0.014)	(0.017)	(0.007)	(0.016)	(0.017)	(0.008)	(0.016)	(0.017)
	0.271	0.200	0.356	0.169	0.131	0.252	0.249	0.122	0.241
Manufacture	-1.454**	-2.973	-2.711	-1.454**	-2.523	-1.793	-1.444**	-3.203	-2.513
	(0.617)	(2.874)	(2.970)	(0.663)	(2.399)	(2.472)	(0.631)	(2.677)	(2.632)
	0.023	0.306	0.366	0.033	0.298	0.472	0.027	0.237	0.344
Income	-0.000*	-0.000	-0.000	-0.000**	-0.000**	0.000	-0.000*	-0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.081	0.136	0.906	0.049	0.018	0.599	0.080	0.015	0.853
EPI	0.007	0.311	0.306				0.007	0.780	0.989
	(0.115)	(0.551)	(0.549)				(0.115)	(0.608)	(0.644)
	0.955	0.575	0.580				0.953	0.205	0.131
RPI				0.024	-0.680*	-0.992*	0.024	-0.903**	-1.334**
				(0.273)	(0.396)	(0.519)	(0.273)	(0.445)	(0.613)
				0.931	0.092	0.062	0.931	0.048	0.034
State dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time dummies	No	No	Yes	No	No	Yes	No	No	Yes
adjRsquared	0.13	0.18	0.17	0.13	0.21	0.23	0.12	0.22	0.25
AIC	-65.6	-239.3	-238.0	-65.6	-242.8	-244.4	-63.6	-243.3	-246.5
BIC	-52.7	-229.0	-225.1	-52.7	-232.5	-231.5	-48.1	-230.4	-231.0
RootMSE	0.17	0.07	0.07	0.17	0.07	0.07	0.17	0.07	0.07
No. of Obs	98	98	98	98	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

The results of the OLS estimation of the first model (Ethnic/Religious Polarization) are reported in Table 1. While my analysis did not yield statistically significant coefficients for *EPI* across all specifications, even with the inclusion of *RPI* in the regression, it's noteworthy that Dincer's study, conducted in a similar context, reported significant *EPI* results in nearly all specifications, even when accounting for *RPI*. This discrepancy underscores a difference in findings between our studies.

In my analysis, *RPI* demonstrates statistical significance in the two specifications that incorporate the state dimension and both the state and time dimensions. Interestingly, its significance appears to intensify when *EPI* is included in the regression. In contrast, in Dincer's analysis, *RPI* tends to show significance primarily in the pooled specification, where no specific dimensions are accounted for, and its significance appears to diminish when *EPI* is included in the regression.

An interesting difference emerges when comparing the results. Dincer consistently found positive coefficients for *RPI* across various specifications, while in my analysis, the coefficient for *RPI* is negative in the specifications that

include the state dimension and both state and time dimensions, even when *EPI* is included. This variation suggests that the relationship between religious polarization and corruption may be more complex than initially assumed by Dincer.

In Appendix (page 88), we've included Dincer's tables for reference. Additionally, we've provided graphical representations below (Figure 1), illustrating the confidence intervals for each model specification. These visuals facilitate the comparison of our results with those of Dincer. As we delve into these graphs, three elements come into focus, guiding our comparative analysis: the signs of the coefficients, the statistical significance of our estimates, and the size of the range, reflecting the precision of our estimates. Notably, we observe that, across almost all model specifications, the confidence intervals in the present study tend to be wider. This widening implies a broader range of potential values, which in turn suggests a degree of uncertainty and reduced precision in our estimates compared to those of Dincer. This observation prompts further investigation into the factors contributing to this difference and its implications for our research.

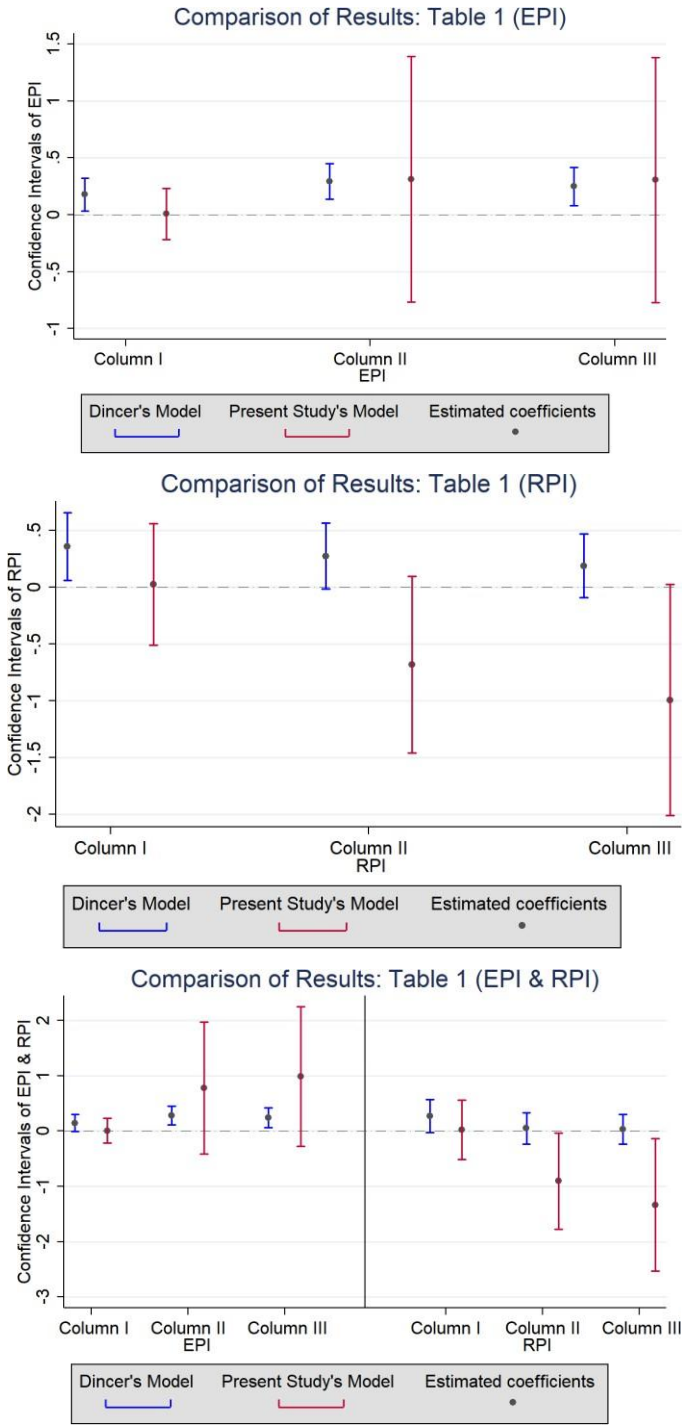


Figure 1: Confidence Intervals: Present Study and Dincer's Table 1

Figure 2*a* & b show the relationships between *EPI* and Corruption and *RPI* and Corruption.

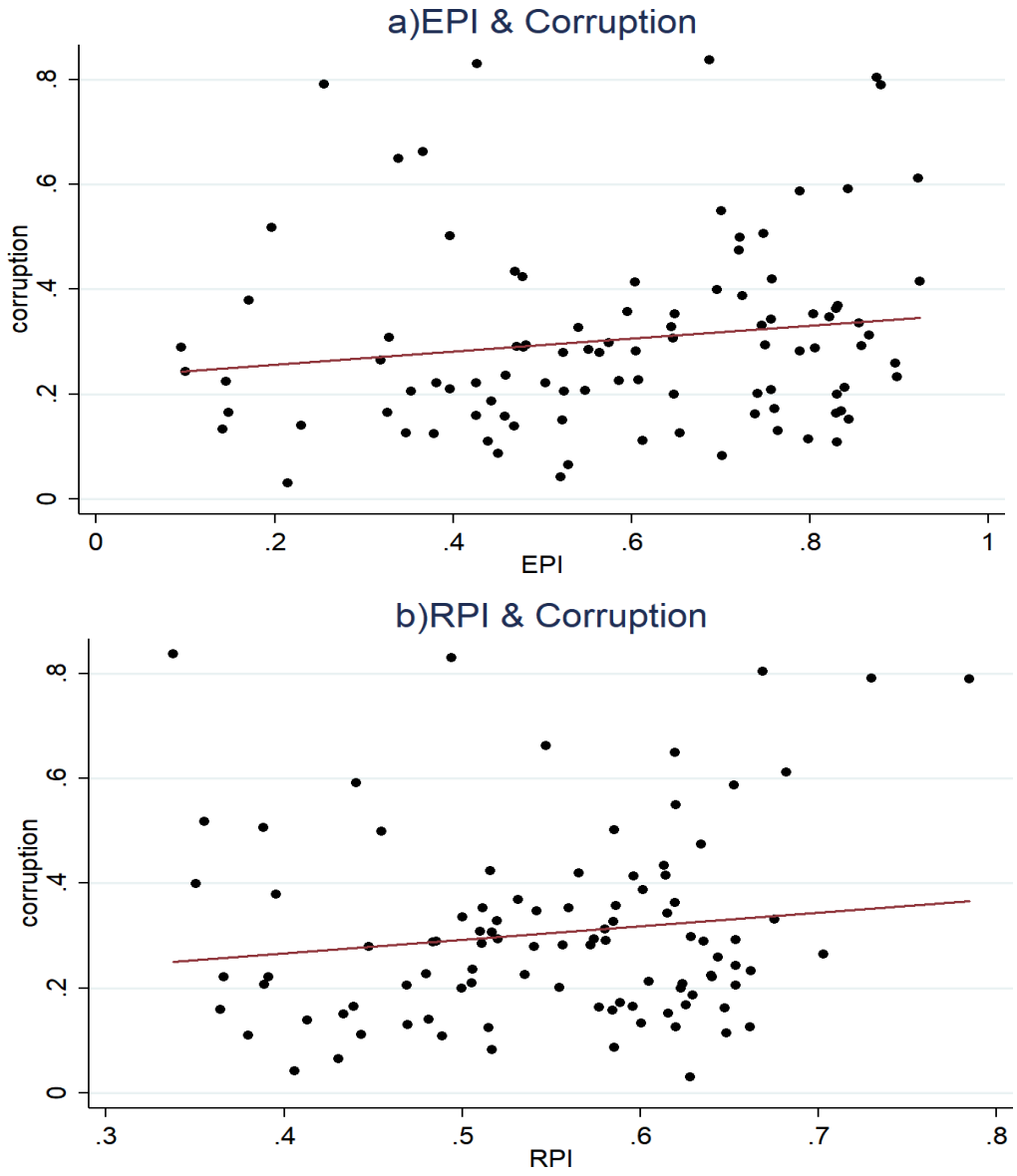


Fig. 2*a. EPI* and Corruption, *b. RPI* and Corruption.

5.2 Ethnic & Religious Fractionalization

Table 2:Ethnic and religious fractionalization

	EFI			RFI			EFI & RFI		
	I	II	III	I	II	III	I	II	III
Education	-0.015*	-0.019	-0.016	-0.011	-0.023	-0.020	-0.018**	-0.025	-0.022
	(0.009)	(0.014)	(0.017)	(0.007)	(0.015)	(0.017)	(0.008)	(0.016)	(0.017)
	0.080	0.184	0.329	0.117	0.142	0.246	0.027	0.113	0.192
Manufacture	-2.033***	-3.157	-2.810	-1.437**	-2.897	-2.490	-2.117***	-3.938*	-3.419
	(0.682)	(2.801)	(2.847)	(0.630)	(2.075)	(2.203)	(0.688)	(2.284)	(2.292)
	0.005	0.265	0.329	0.027	0.169	0.264	0.003	0.091	0.142
Income	-0.000	-0.000	-0.000	-0.000	-0.000*	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.184	0.220	0.889	0.104	0.086	0.807	0.440	0.238	0.986
EFI	0.752*	0.994	1.085				0.796**	1.679	2.389
	(0.391)	(1.285)	(1.338)				(0.361)	(1.315)	(1.925)
	0.060	0.443	0.421				0.032	0.208	0.221
EFI^2	-1.290**	-1.007	-0.873				-1.457***	-2.075	-2.177
	(0.548)	(1.360)	(1.311)				(0.504)	(1.401)	(1.477)
	0.023	0.463	0.509				0.006	0.145	0.147
RFI				0.166	-5.800**	-5.801***	0.789	-6.460***	-6.175***
				(0.594)	(2.219)	(2.082)	(0.618)	(2.137)	(2.000)
				0.781	0.012	0.008	0.208	0.004	0.003
RFI^2				-0.011	4.247**	4.424***	-0.500	4.891***	4.996***
				(0.546)	(1.621)	(1.552)	(0.558)	(1.558)	(1.483)
				0.984	0.012	0.006	0.374	0.003	0.001
State dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time dummies	No	No	Yes	No	No	Yes	No	No	Yes
adjRsquared	0.15	0.17	0.17	0.14	0.24	0.24	0.16	0.25	0.25
AIC	-67.3	-237.7	-236.4	-65.2	-245.6	-245.3	-66.1	-244.9	-245.1
BIC	-51.8	-224.8	-220.9	-49.7	-232.7	-229.7	-45.4	-226.8	-224.5
RootMSE	0.17	0.07	0.07	0.17	0.07	0.07	0.17	0.07	0.07
No. of Obs	98	98	98	98	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Table 2 presents the findings from the OLS estimation of the second model (Ethnic/Religious Fractionalization).

In my analysis, I observed a significant relationship between *EFI*, *EFI* squared, and corruption only in the pooled specification, and this significance becomes even stronger when *RFI* and *RFI* squared are included. However, it's important to note that Dincer's results show consistent and full significance across all specification. Similar to Dincer's findings, the coefficients for *EFI* are consistently positive, while the coefficients for *EFI* squared are consistently negative.
We can cautiously speculate that there might be a non-linear inverted U-shaped relationship between *EFI* and corruption when we do not separate the state and time dimensions, although this conclusion is not as robust as Dincer's findings.

The results related to *RFI* in my analysis are indeed more intricate. Statistically significant findings emerge in the specifications that incorporate both state and

state-time dimensions, particularly when *EFI* is included in the regression. However, the signs of these coefficients starkly contrast with Dincer's findings.

Dincer's research indicates that the coefficients for *RFI* are positive, while those for *RFI* squared are negative. In contrast, my analysis reveals the opposite pattern in the significant specifications: the coefficients for *RFI* are negative, and the coefficients for *RFI* squared are positive.

These divergent results suggest the possibility of a nonlinear relationship beyond a simple quadratic one, or they may point to the influence of outliers in the data. Further exploration is warranted to better understand the intricacies of this relationship.

To summarize, the comparison of our results with Dincer's highlights that the relationship between religious diversity and corruption is more intricate and nuanced than originally suggested in Dincer's study. The contrasting signs for *RPI* and *RFI* coefficients in our analysis, raise questions about potential outlier influence or the possibility of non-linear relationships, particularly for *RPI* and potentially higher polynomial degrees for *RFI*. This complexity underscores the necessity for further in-depth research to delve into the intricacies of the connection between diversity indices and corruption. Additional investigations are needed to better comprehend the underlying dynamics and contributing factors that drive these varied outcomes.

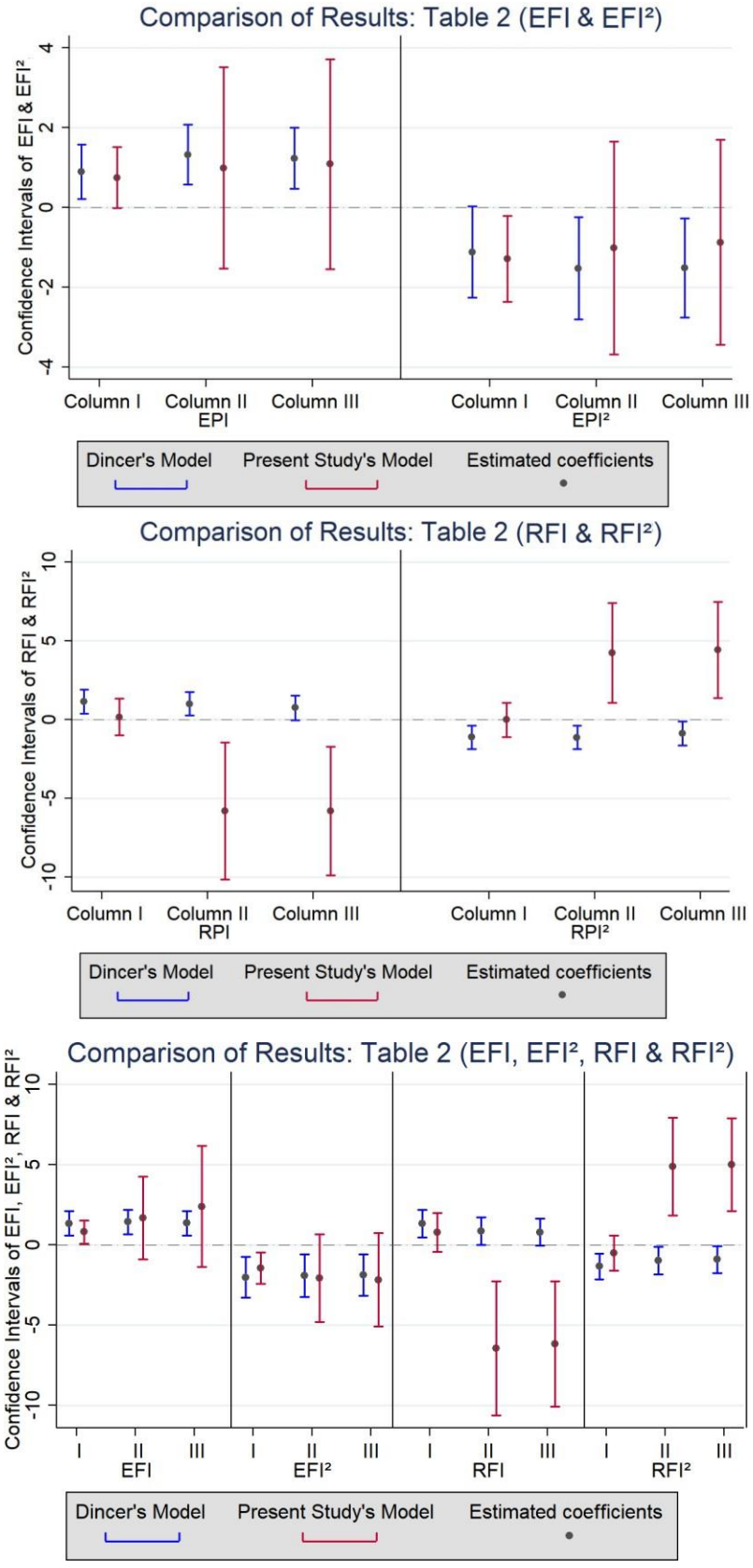


Figure 3: Confidence Intervals: Present Study and Dincer's Table 2

Figure 4*a* & *b* show the relationships between *EFI* and Corruption and *RFI* and Corruption.

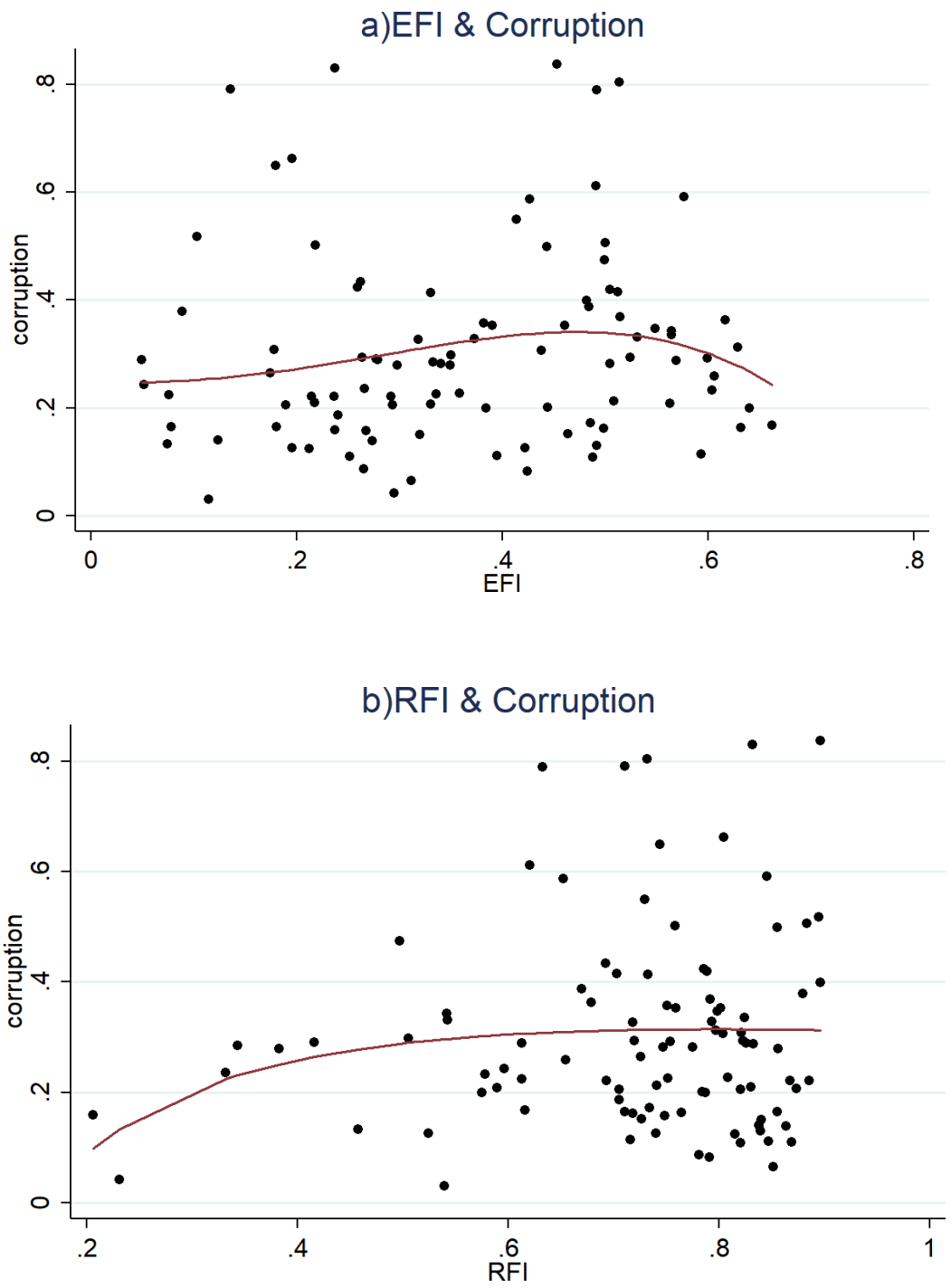


Fig. 4*a*. *EFI* and Corruption, *b*. *RFI* and Corruption.

5.3 Robustness Analysis: Excluding Outliers

Following the methodology outlined by Dincer, I conducted an outlier analysis to assess the potential impact of outliers on my research findings. To ensure that a few outliers were not unduly influencing the outcomes, I employed both Z scores and Grubbs' methodologies to identify outliers for all the independent variables in my analysis.
The results of this outlier analysis indicated that neither methodology identified any outliers in the model involving polarization indices. However, it's worth highlighting that the state of Utah was identified as an outlier in the case of *RFI* but not *EFI,* for both time periods, according to both outlier identification methods.
This discrepancy regarding Utah's status as an outlier, when compared to Dincer's study where Utah was identified as an outlier for both fractionalization indices, raises an interesting point. Upon further investigation, I discovered that a significant portion of Utah's population, approximately 89% for 2000 and 87% for 2010, belongs to a subcategory of religious groups known as the Church of Jesus Christ of Latter-day Saints. These proportions represent substantial shares within the context of the 149 subcategories of religious groups considered in the analysis for 2000 and the 236 subcategories for 2010. Significantly, I conducted further investigation as I wanted to determine if this was indeed the reason for Utah being identified as an outlier in both datasets. This thorough examination was necessary to ensure the accuracy of the outlier status and to rule out any potential errors. I observed the same pattern of a significant proportion of the total religious population being affiliated with this subcategory in the time data that Dincer used, which could explain why Utah is identified as an outlier for both datasets.
Given the unique composition of Utah's religious landscape, where a large majority is affiliated with a sub category of a religious group, it is conceivable that this particular group might significantly affect the religious fractionalization index.

In the broader context of my analysis, which focuses on religious polarization primarily between Protestants and Catholics in the USA, the inclusion of such a highly homogeneous religious group like the Church of Jesus Christ of Latter-day Saints could potentially introduce distortion and misrepresentation in the results. To maintain the integrity and accuracy of the analysis, it might be prudent to consider excluding Utah from the dataset, even though it may not be identified as an outlier for religious polarization. This decision is justified by the fact that while it may not exhibit outlier characteristics in terms of polarization, the presence of such a distinctive religious group within the state can still significantly impact the overall results, leading to potential bias and misinterpretation of the findings.

Table 3:Ethnic and religious fractionalization (outliers excluded)

	EFI			RFI			EFI & RFI		
	I	II	III	I	II	III	I	II	III
Education	-0.015*	-0.021	-0.018	-0.010	-0.023	-0.020	-0.018*	-0.025	-0.022
	(0.009)	(0.014)	(0.017)	(0.007)	(0.015)	(0.017)	(0.010)	(0.016)	(0.017)
	0.094	0.158	0.297	0.165	0.146	0.247	0.063	0.116	0.194
Manufacture	-2.041***	-3.264	-2.870	-1.449**	-2.897	-2.494	-2.121***	-3.933*	-3.418
	(0.683)	(2.790)	(2.834)	(0.631)	(2.066)	(2.204)	(0.702)	(2.278)	(2.297)
	0.004	0.248	0.316	0.026	0.167	0.264	0.004	0.091	0.143
Income	-0.000	-0.000	-0.000	-0.000*	-0.000*	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.226	0.267	0.994	0.094	0.097	0.820	0.570	0.230	0.984
EFI	0.805**	1.098	1.217				0.810**	1.672	2.392
	(0.395)	(1.292)	(1.353)				(0.366)	(1.327)	(1.962)
	0.047	0.400	0.373				0.032	0.214	0.229
EFI²	-1.382**	-1.164	-1.026				-1.488***	-2.066	-2.179
	(0.555)	(1.374)	(1.330)				(0.553)	(1.410)	(1.492)
	0.016	0.401	0.445				0.010	0.149	0.151
RFI				-0.399	-5.990**	-5.883**	0.843	-6.589**	-6.157***
				(1.071)	(2.581)	(2.402)	(1.381)	(2.462)	(2.282)
				0.711	0.025	0.018	0.545	0.010	0.010
RFI²				0.390	4.390**	4.484**	-0.539	4.987***	4.983***
				(0.864)	(1.899)	(1.775)	(1.073)	(1.801)	(1.636)
				0.654	0.025	0.015	0.618	0.008	0.004
State dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time dummies	No	No	Yes	No	No	Yes	No	No	Yes
adjRsquared	0.14	0.17	0.17	0.11	0.23	0.23	0.14	0.24	0.24
AIC	-65.6	-231.7	-230.6	-62.2	-238.5	-238.0	-62.7	-237.7	-237.8
BIC	-50.2	-218.8	-215.2	-46.9	-225.7	-222.7	-42.2	-219.7	-217.3
RootMSE	0.17	0.07	0.07	0.17	0.07	0.07	0.17	0.07	0.07
No. of Obs	96	96	96	96	96	96	96	96	96

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

In the results of *RFI* and *EFI*, where I excluded the outliers from Utah, there are generally no significant differences, except for the sign change observed in the pooled regression for *RFI* and *RFI* squared when not accounting for dimensions. This sign change is in contrast to Dincer's results, where he found that *RFI* is positive and *RFI* squared is negative. Furthermore, it's essential to highlight that when Utah is excluded, the model's goodness-of-fit indicators, including adjusted R-squared, AIC (Akaike Information Criterion), and BIC (Bayesian Information Criterion), show a deterioration in model fit.

On the other hand, Dincer's results remain consistent whether Utah is excluded or not. However, it's worth noting that the coefficient for *RFI* lost its statistical significance in most specifications, and the significance of *RFI* squared experiences a slight decrease in Dincer's results when Utah is excluded.

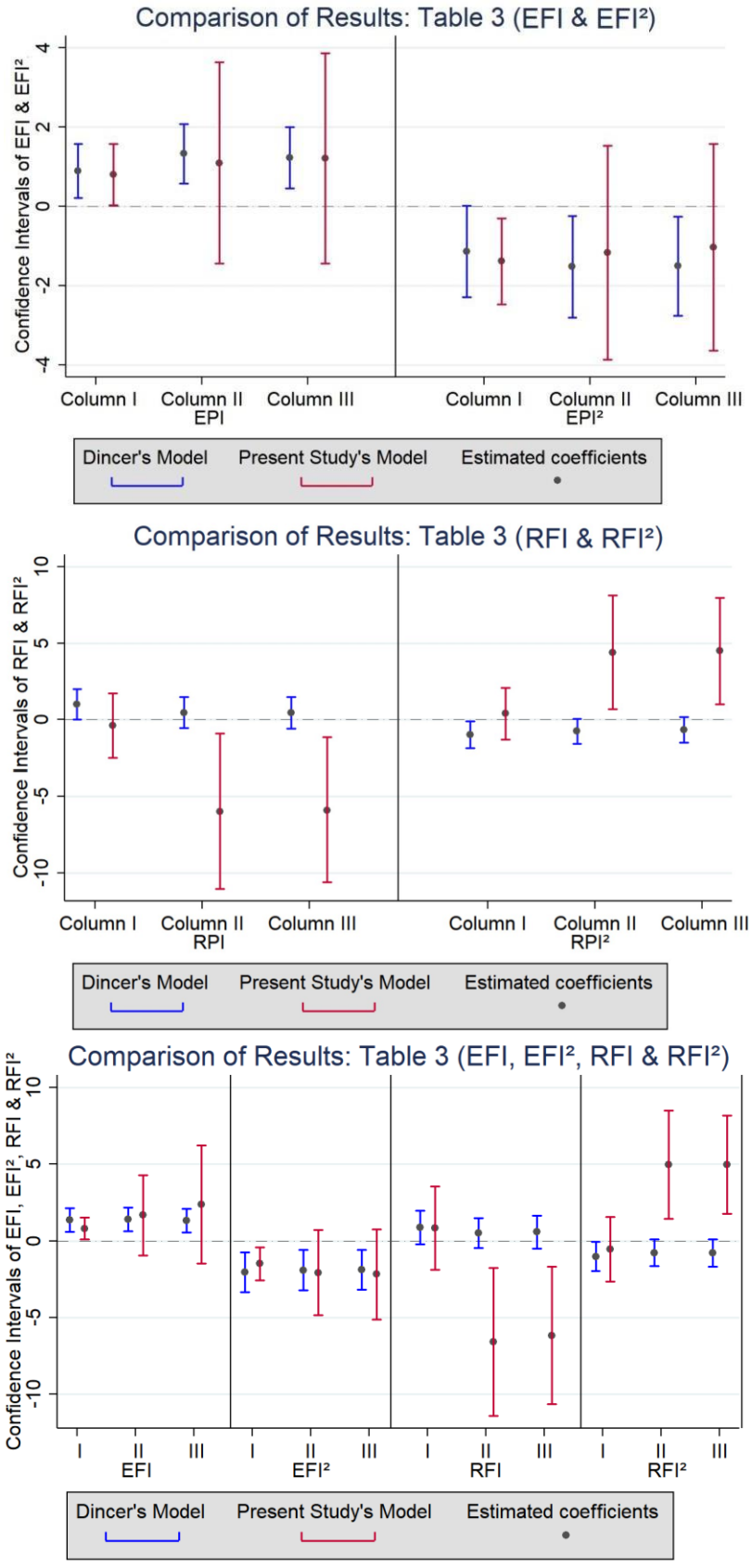


Figure 5: Confidence Intervals: Present Study and Dincer's Table 3

Figure 6*a* & *b* show the relationships between *EFI* and Corruption and *RFI* and Corruption.

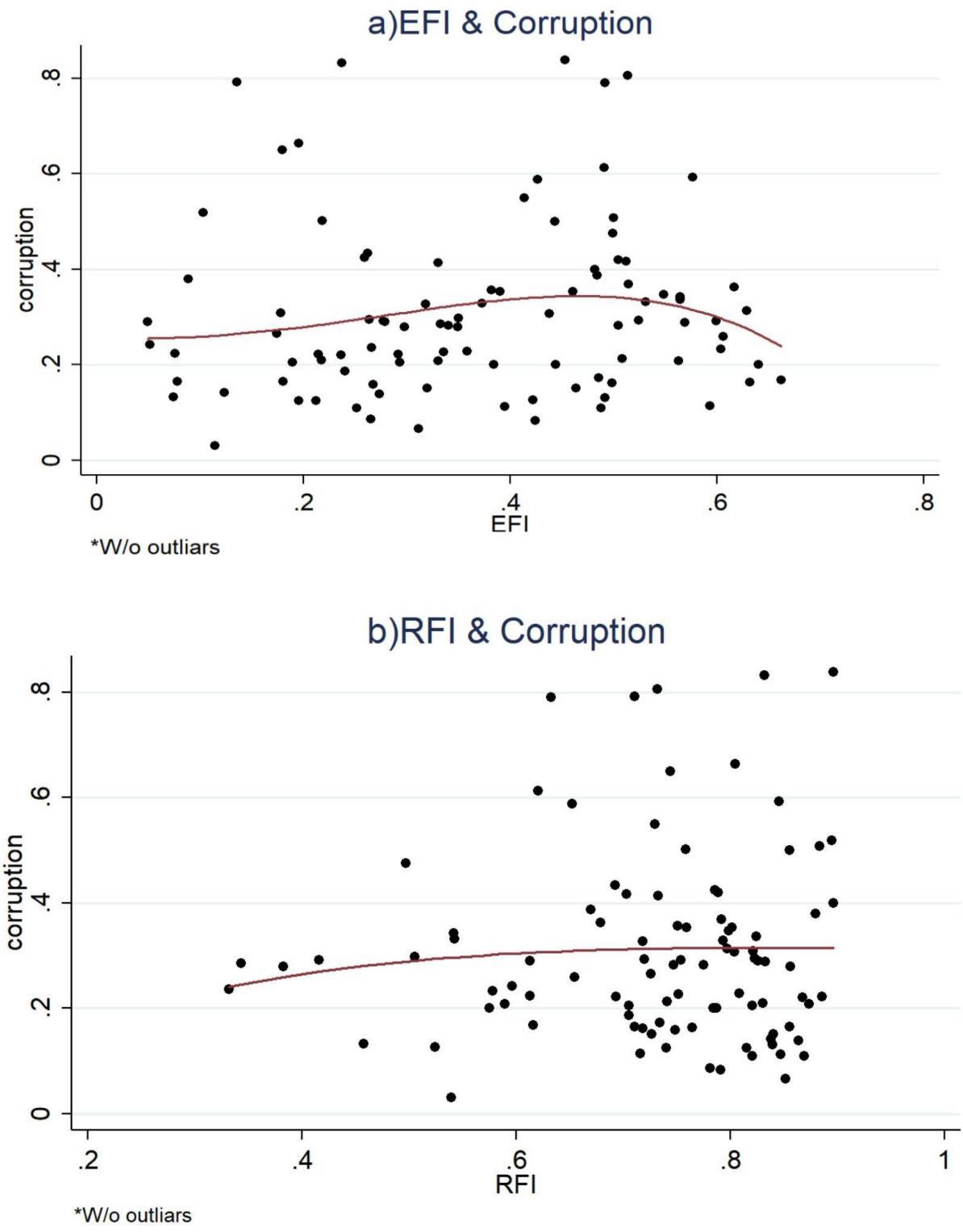


Fig. 6*a. EFI* and Corruption, *b. RFI* and Corruption.

6. Empirical Results

The results after excluding outliers, did not sufficiently account for the differences observed between our findings and those of Dincer, particularly in the context of religious diversity models. To bridge this gap and better understand why variables like religious polarization (*RPI*) and religious fractionalization (*RFI*) exhibit opposite signs in our respective research, it becomes imperative to explore potential nonlinear relationships. Specifically, we should investigate the presence of nonlinear associations between corruption and religious polarization (*RPI*) while also considering the possibility of a higher polynomial degree relationship between corruption and religious fractionalization (*RFI*).

In this subsection, I will undertake a comprehensive series of regression analysis aimed at investigating the intricate connections between *RPI*, *EPI*, *EFI*, and *RFI* and their possible nonlinear relationships with corruption. To achieve this, I will employ polynomial degrees spanning from 1 to 5 for each of these variables. The analysis will encompass five regressions for each variable within three different model specifications: pooled models, models considering the state dimension, and models incorporating both state and time dummies.

To provide further clarity, each regression will encompass a unique degree of the variable, starting with its linear form in the first regression and subsequently including higher degrees up to degree 5 in the following regressions.

By employing this approach, we aim to unravel any potential nonlinear associations between these diversity indices and corruption. This comprehensive exploration will contribute to a deeper understanding of the underlying dynamics and mechanisms at play in these relationships.

5.1 Polynomial Regression Analysis of Ethnic and Religious Polarization

In the *EPI* pooled specification (Appendix 10), none of the five polynomial degrees exhibited statistical significance. The goodness-of-fit indicators, including AIC, BIC, and adjusted R-squared, consistently indicated that the model with the linear form (degree 1) of *EPI* is the optimal choice for the pooled regression.

Furthermore, in the specifications with the state dimension and those including both state and time dimensions (Appendix 11, 12), the regression including polynomial degrees up to degree 5 provided the best fit. Remarkably, for both the regression with the state dimension and the one with both state and time dimensions, the degree 5 polynomial of *EPI* was found to be statistically significant at the 0.1 significance level, whereas no other polynomial degrees in any of the five regressions demonstrated significance. It's important to note that while this level of significance raises interesting questions, it is not sufficient to draw conclusive evidence for a non-linear relationship that contrasts with Dincer's findings. As a result, we cannot unequivocally support or reject Dincer's findings based on our analysis.

Despite our comprehensive exploration of polynomial degrees up to the fifth degree of *EPI*, none of these non-linear relationships achieved statistical significance in any specification. Notably, when examining the graph, the linear relationship for EPI demonstrates superior performance in terms of avoiding overfitting, particularly when compared to the fifth-degree polynomial. On the left side of the graph, the degree 5 line appears less smooth and more influenced by scattered data points, suggesting that a linear model for *EPI* might be a more appropriate choice to capture the underlying relationship while avoiding excessive complexity. However, it's worth noting that we did not find the anticipated linear relationship between ethnic polarization and corruption, as Dincer did in his research.
In light of these findings, it becomes evident that the relationship between ethnic polarization and corruption is a topic that requires further in-depth exploration.

The results of our analysis, particularly the strong statistical significance observed in the polynomial regressions up to degree 5 for *RPI* in each specification (Appendix 7, 8, 9), challenge Dincer's linear theory of religious polarization. In the case of Religious Polarization, the fifth regression is the most suitable fit, and all of its degrees of religious polarization exhibit statistical significance across all specifications. However, Dincer's argument suggests that religious polarization increases corruption as it intensifies, but our findings unveil a more intricate relationship. In our study, corruption is high not only when religious polarization is high but also when it is low, with a modest peak in corruption observed at moderate levels of religious polarization. When examining the graphical representation of Figure 4*b*, it is clear that *RPI*'s degree 5 polynomial regression aligns well with the scatter plots. This finding is pivotal as it questions the oversimplified assumption and indicates that the factors influencing corruption in the presence of religious polarization are more multifaceted than previously believed. To gain a deeper understanding of this relationship, further research and exploration of contextual variables are undoubtedly warranted.

The graphs below provide a visual representation of the relationships between *EPI*/*RPI* (x-axis) and corruption (y-axis), including five lines representing relationships from linear to degree 5 with corruption.

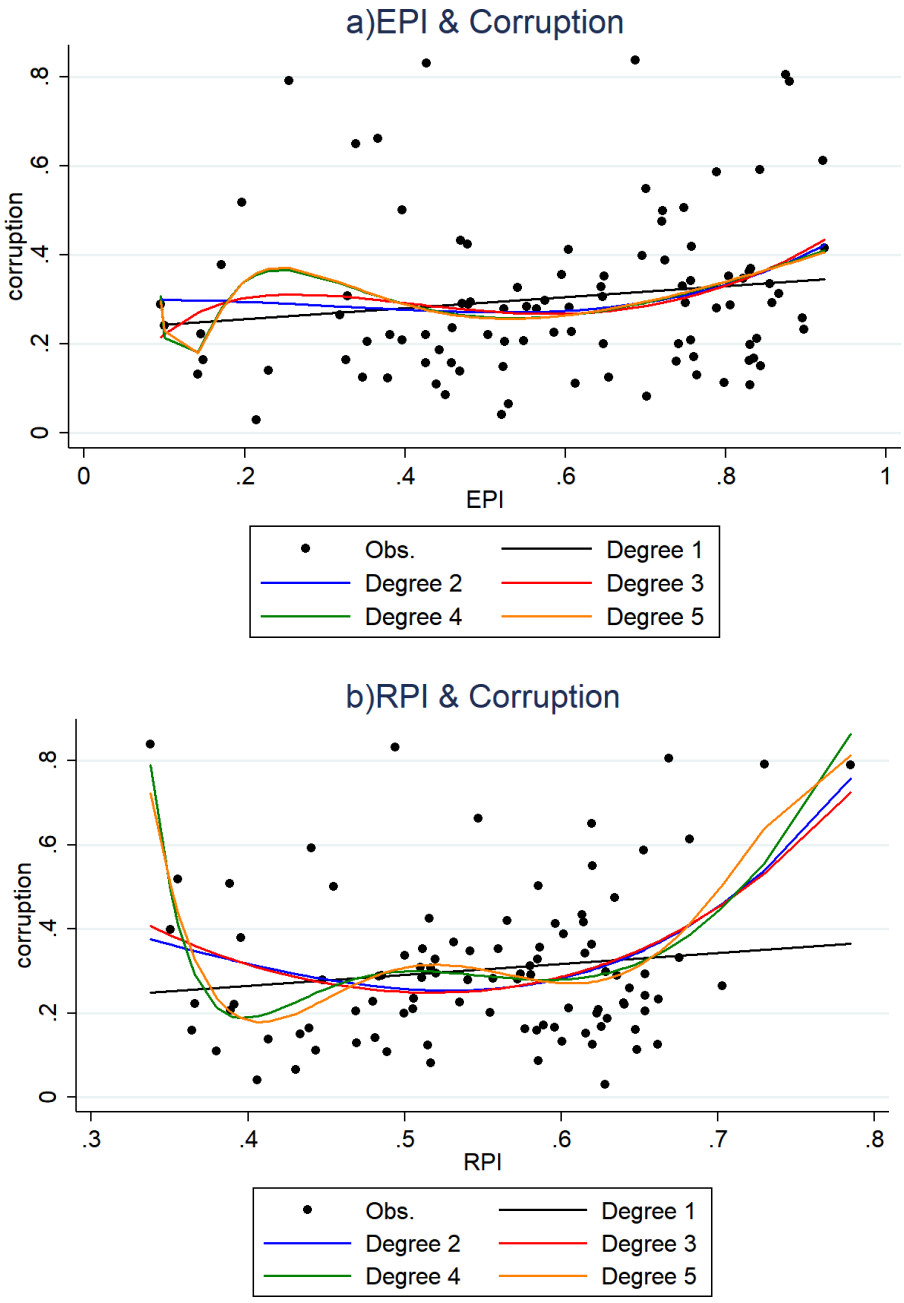


Figure 7*a & b*: Polynomial Graphic Analysis of *EPI/RPI* and Corruption (Degrees 1 to 5)

As mentioned earlier, in the context of this research conducted in the United States, the primary religious polarization of interest revolves around Catholics and Protestants. These two religious groups represent the main denominations that a significant portion of the population adheres to. Therefore, the focus of this study is specifically on the religious polarization between Catholics and Protestants in the USA, which in this context, measures the degree of conflict or division between these two major religious groups.

Now, it's important to note that the decision to exclude Utah from the analysis is a methodological choice made to maintain the research's focus. This decision was not explicitly addressed or mentioned by Dincer in the original study. The rationale behind excluding Utah is rooted in the fact that Utah's religious landscape is notably distinct. A substantial portion of Utah's population is affiliated with the Church of Jesus Christ of Latter-day Saints, which is a separate religious entity with its own unique dynamics and interactions. Therefore, including Utah in the analysis would introduce a third major religious group into the equation, which could potentially confound the analysis of religious polarization between Catholics and Protestants.

By excluding Utah, the analysis can maintain its focus on the religious polarization that primarily involves Catholics and Protestants, without the complicating influence of a highly homogeneous religious group like the Church of Jesus Christ of Latter-day Saints. This decision aligns with the research's goal of providing insights into the specific dynamics of polarization between the two main religious groups in the USA, Catholics and Protestants, rather than attempting to draw generalized conclusions about religious polarization worldwide.

In summary, excluding Utah from the analysis is a deliberate choice to ensure that the research remains focused on the unique religious polarization between Catholics and Protestants in the USA, without introducing additional complexity from a distinct religious group, ultimately leading to more accurate and meaningful findings.

The comparison between *RPI* with Utah included and *RPI* without Utah (Appendix 16, 17, 18) shows that not excluding Utah is better but not significantly different, as indicated by measures of goodness of fit. Notably, the graph representing *RPI* degrees with corruption exhibits no differences compared to the graph of *RPI* degrees with corruption. There is no substantial variance in the power of significance, nor any notable changes in the signs of coefficients. In essence, the decision to include or exclude Utah does not appear to yield substantial differences in the outcomes.

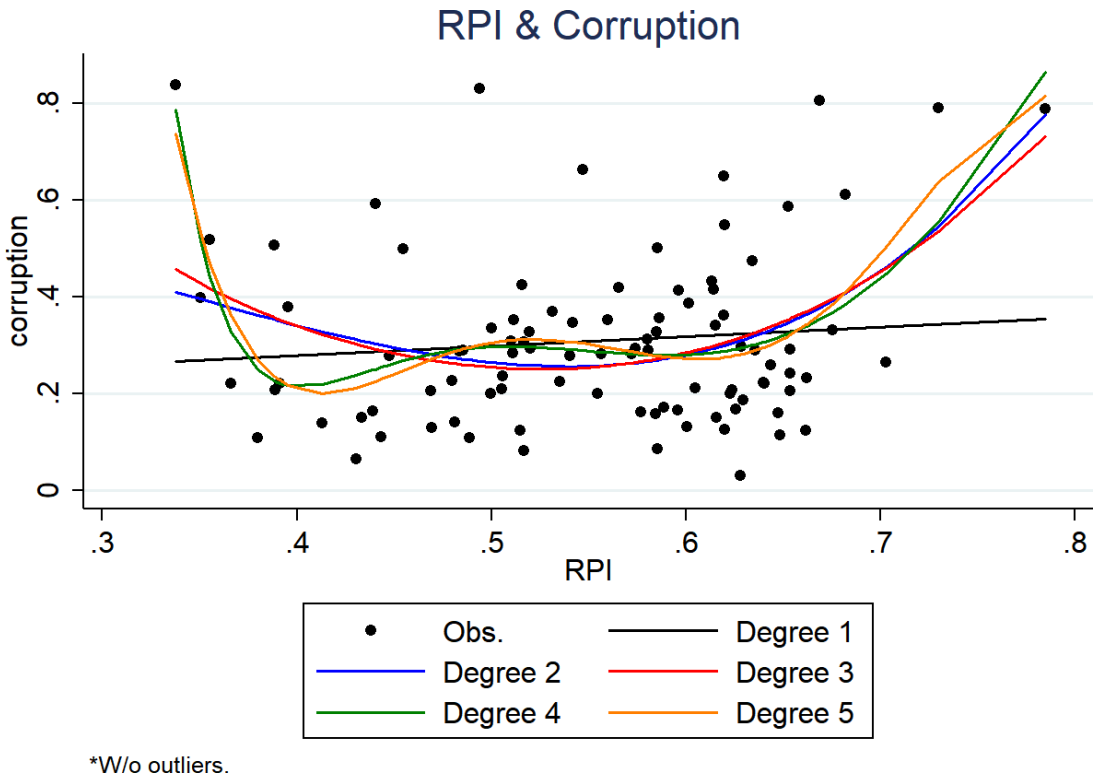


Figure 8: Polynomial Graphic Analysis of *RPI* and Corruption (Degrees 1 to 5)

5.2 Polynomial Regression Analysis of Ethnic and Religious Fractionalization

In the *EFI* Pooled Specification (Appendix 1), only the regression up to degree 2 exhibits statistical significance in *EFI* squared at a 5% significance level. While the adjusted R-squared value is not optimal for this regression, AIC and BIC metrics indicate a different trend, favoring this model. This quadratic relationship aligns with Dincer's findings, who concluded that degree 2 explains the relationship between ethnic fractionalization and corruption. It is noteworthy, however, that he did not explore more complex relationships with higher degrees.

In the *EFI* State and both State and Time Specifications (Appendix 2, 3), the regression model up to degree 4 provides the most favorable goodness of fit. Additionally, it's worth highlighting that this is the only regression in which the majority of *EFI* degrees achieve statistical significance. Furthermore, upon examining the graphical representation, it becomes evident that degree 4 aligns more closely with the scatterplot patterns, implying a higher degree of compatibility.

The disparities in our findings compared to Dincer's research primarily stem from differences in the nature of the relationship under examination. Dincer identified an upward concave curve (Appendix page 89, 90), suggesting that the highest levels of corruption occur in moderately to highly ethnically fractionalized societies. However, **Montalvo and Reynal-Querol (2005)** argued that ethnocentric behavior is unlikely to be observed in both strongly and weakly fractionalized societies, proposing an inverted U-shaped relationship between ethnic fractionalization and corruption. Despite Dincer's decision to focus on a degree 2 relationship, influenced by the latter suggestion, his results did not align well with this theory. Furthermore, our degree 4 relationship is more compatible with Montalvo and Reynal-Querol's theory but deviates by suggesting that ethnocentric behavior is not likely to be observed in strongly, moderately, and weakly fractionalized societies.

In the *RFI* pooled specification (Appendix 4), no *RFI* degrees show statistical significance. Degree 1 is the optimal model based on goodness of fit. While, in the *RFI* state and state-time specifications (Appendix 5, 6), all *RFI* degrees are statistically significant up to degree 2 and degree 4 regressions. However, adjusted R-squared and AIC metrics favor the degree 4 model.

Similarly to Dincer's findings, our research has identified a statistically significant quadratic relationship between *RFI* and corruption. However, upon extending the analysis to higher polynomial degrees, we have determined that a polynomial model of degree 4 provides a superior fit to the data. This conclusion is supported by improved adjusted R-squared and AIC values. While our study does not invalidate Dincer's results, it does suggest that a more intricate relationship exists between religious fractionalization and corruption in our specific dataset. This nuanced perspective underscores the significance of considering more complex models to gain a deeper understanding of the intricate dynamics at play between religious fractionalization and corruption.

Upon closer inspection, the left side of the graph (Figure 6*b*) reveals two data points on the scatter plot (representing the state of Utah), deviate substantially from the rest of the data. To attain a clearer understanding of the relationship between *RFI* and corruption and to draw more robust conclusions, it is advisable to once again exclude the Utah outlier from the analysis. This precautionary step will help ensure that the results are not unduly influenced by these exceptional data points.

The graphs below provide a visual representation of the relationships between *EFI*/*RFI* (x-axis) and corruption (y-axis), including five lines representing relationships from linear to degree 5 with corruption.

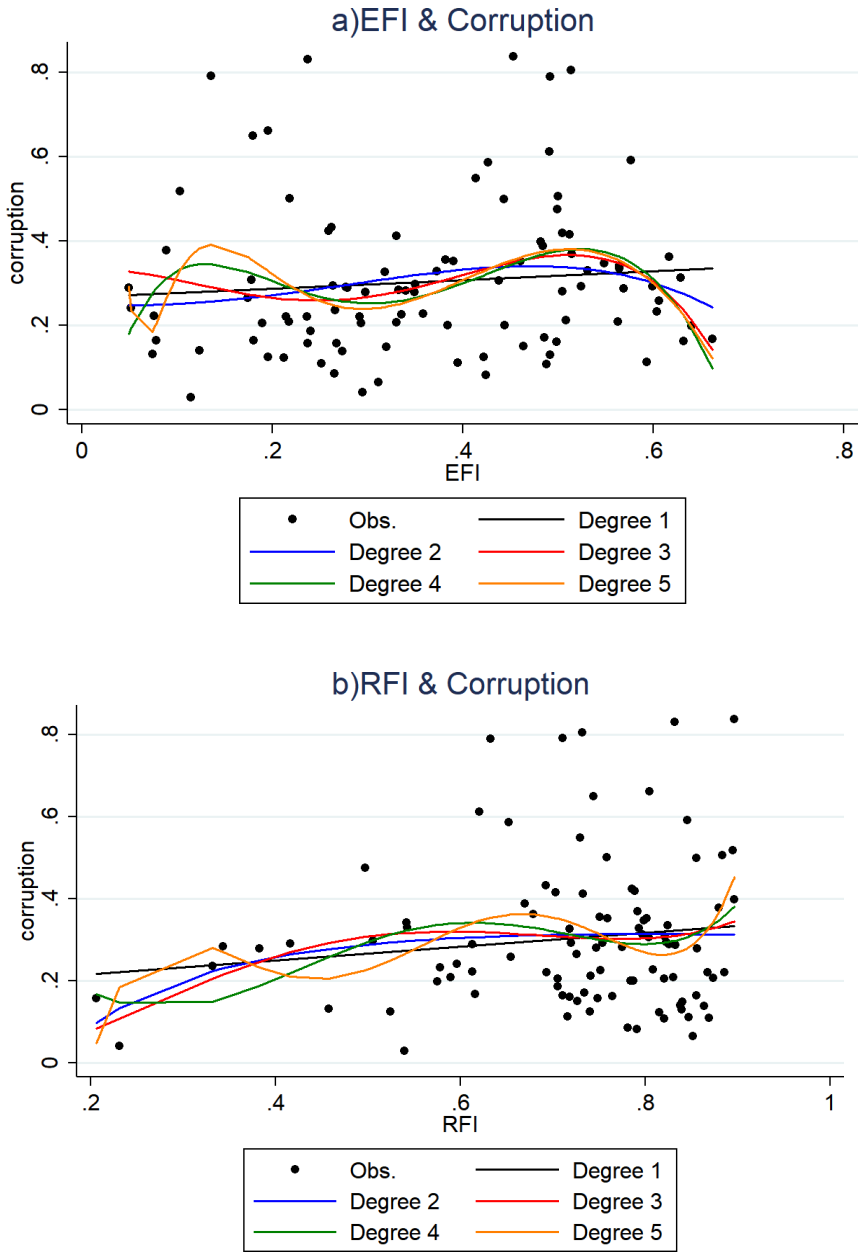
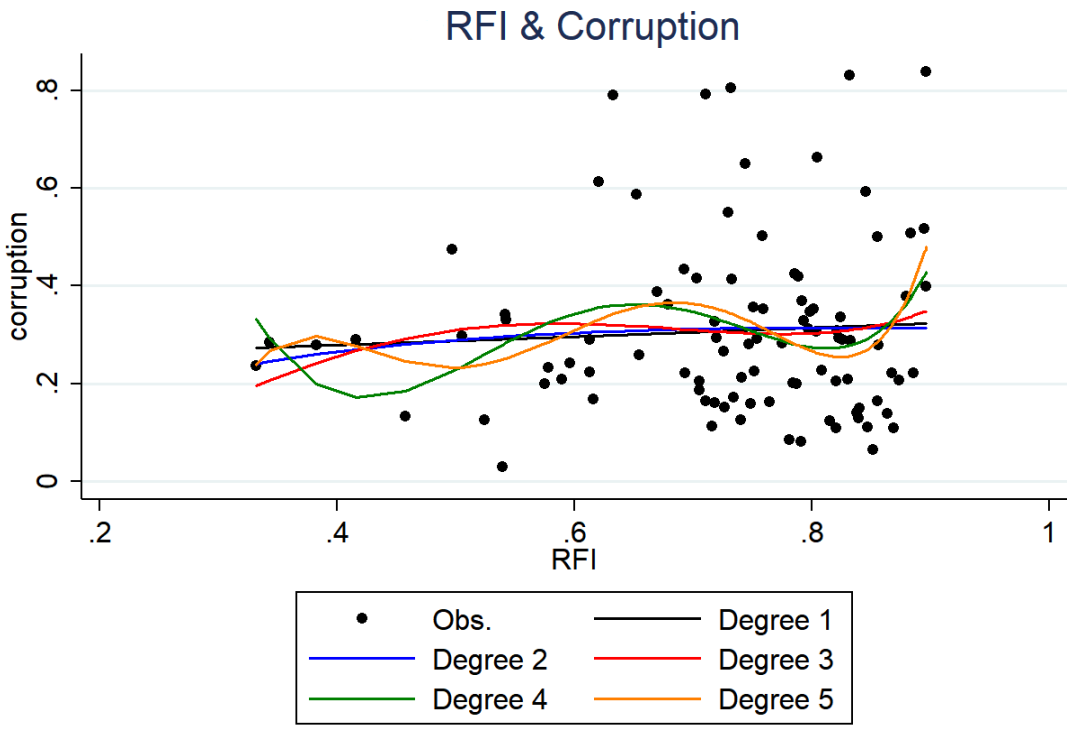


Figure 9*a & b*: Polynomial Graphic Analysis of *EFI/RFI* and Corruption (Degrees 1 to 5)

Excluding the Utah outlier in the analysis of *RFI* yields distinct results from its inclusion. With the exclusion, the *RFI* pooled specification (Appendix 13) shows that regression up to degree 5 is optimal, with each degree of *RFI* achieving statistical significance at p=0.1. However, when the Utah outlier is not excluded, a linear relationship between corruption and *RFI* is previously observed as statistically insignificant but optimal in terms of goodness of fit within the pooled specification. These observations suggest that when not considering the state and both state-time specifications, the *EFI* may not significantly impact corruption.

The difference in excluding or including Utah in the state and both state-time dimension specifications (Appendix 14, 15) is that while all *RFI* degrees were statistically significant in regressions up to degree 2 and 4, they lose significance, and regressions up to degree 2 and 3 become significant. However, the choice between degree 2 and 3 regressions is not clear-cut, and further evaluation may be necessary to determine which one better represents the relationship.

The examination of the graph below has yielded inconclusive results regarding the choice between a second or third-degree polynomial curve. Notably, the exclusion of the outlier did not substantially clarify the relationship between corruption and *RFI*. However, we can cautiously conclude that there seems to be a quadratic or cubic relationship, which partially aligns with Dincer's findings.



*W/o outliers.

Figure 10: Polynomial Graphic Analysis of *RFI* and Corruption (Degrees 1 to 5)

6. Conclusions

This paper aimed to investigate the relationships between *RPI*, *RFI*, *EPI*, and *EFI*, building upon Dincer's earlier work in a more recent context. However, certain discrepancies in the findings, particularly variations in the signs of these relationships, prompted us to delve deeper into the complexities of these connections.

As a conclusion to the above, our research underscores the need to further unravel the complexities associated with the relationships between corruption and *EPI* or *RFI*. To address the intricate nature of these interactions, it is imperative that future research endeavors explore alternative methodologies, extend the time frame of analysis, or consider the inclusion of additional relevant variables. For instance, incorporating *EFI* as an additional variable in the regression analysis between corruption and *EPI*, might yield valuable insights. These avenues of investigation hold the potential to provide deeper insights into the intricate relationships between corruption and *EPI* or *RFI*. In summary, the multifaceted nature of these relationships necessitates a more holistic and multidimensional research approach. Through comprehensive efforts, we can aspire to gain a clearer understanding of the complex dynamics that underlie these phenomena and, in turn, contribute to the formulation of more effective policy interventions in the future.

In the analysis of corruption and *EFI*, this research uncovers a noteworthy relationship with ethnic fractionalization, particularly for a polynomial degree of 4. This contrasts with Dincer's preference for a degree 2 model. Dincer's research indicated an upward concave curve, implying that the highest levels of corruption are found in moderately to highly ethnically fractionalized societies. However, our degree 4 curve suggests an alternative perspective, which aligns in part with Montalvo and Reynal-Querol's theory. It implies that ethnocentric behavior is improbable in strongly, moderately, and weakly fractionalized societies.

These findings are significant and raise important questions for further research. To better understand the underlying mechanisms and interpret these results, additional investigation is needed. Future research should consider employing non-parametric methods to avoid making assumptions about the functional form

of the relationship between *EFI* and corruption. Exploring the presence of different thresholds within the data could also provide more insights into this complex relationship.

The key findings of this research provide fresh insights into the relationship between religious polarization and corruption. Dincer's approach, which assumed a linear relationship between religious polarization and corruption, may have underestimated the complexity of this relationship and failed to account for non-linearity. Our study departs from Dincer's linear perspective and reveals a significant 5-degree relationship between religious polarization and corruption, taking the form of a U-shaped curve with a small peak for middle values of religious polarization. This suggests that religiocentric behavior is likely to be observed in both strongly and weakly polarized societies, challenging Dincer's previous view.

The increasing part of the curve, indicating that societies with higher religious polarization experience increased corruption, can be partly interpreted using theories that suggest politicians favor their own group members, as proposed by Glaeser and Saks (2004) and Vanhanen (1999). Building on these theories, we suggest that in societies with increased religious polarization, politicians often allocate resources to supporters of their own religious affiliations. Consequently, members of a specific religious group might continue to support a politician or bureaucrat from their own religious group, even in the presence of allegations of corruption. Additionally, the explanation for the high levels of corruption observed in societies with the lowest values of religious polarization may indicate a strong connection between the government and the church. This alignment could lead to corruption occurring without being held accountable, signifying a concerning issue in such societies.

In summary, while our study contributes valuable insights into the relationship between religious polarization and corruption within the USA, it is essential to recognize the contextual limitations of these findings. The intricate interplay between corruption and polarization can manifest differently in diverse countries and regions. Future research endeavors should prioritize understanding the role of religious composition and conflict dynamics in shaping corruption trends within specific contexts.

Ultimately, our hope is that this research serves as a catalyst for further exploration into the intricate relationship between corruption and religious polarization, providing both contributions and clarity for future studies.

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8. Appendix

Appendix 1: Selection of Polynomial Degree for EFI in Pooled Regression

	I) Degree 1	I) Degree 2	I) Degree 3	I) Degree 4	I) Degree 5
EFI	-0.097	0.752*	-0.515	4.558	9.743
	(0.154)	(0.391)	(1.347)	(3.306)	(7.480)
	0.533	0.060	0.704	0.174	0.199
Income	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.146	0.184	0.226	0.320	0.284
Education	-0.012	-0.015*	-0.015*	-0.016*	-0.015*
	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)
	0.155	0.080	0.088	0.062	0.097
Manufacture	-1.599**	-2.033***	-1.947***	-1.709**	-1.711**
	(0.617)	(0.682)	(0.671)	(0.662)	(0.671)
	0.013	0.005	0.006	0.013	0.014
EFI^2		-1.290**	2.911	-25.794	-67.312
		(0.548)	(4.652)	(17.449)	(57.783)
		0.023	0.534	0.146	0.250
EFI^3			-3.981	56.859	199.908
			(4.476)	(35.086)	(195.819)
			0.378	0.112	0.312
EFI^4				-43.063*	-263.682
				(24.046)	(299.563)
				0.080	0.383
EFI^5					125.062
					(168.871)
					0.463
adjRsquared	0.13	0.15	0.15	0.17	0.16
AIC	-66.0	-67.3	-66.4	-67.0	-65.6
BIC	-53.1	-51.8	-48.3	-46.3	-42.3
RootMSE	0.17	0.17	0.17	0.17	0.17
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 2: Selection of Polynomial Degree for EFI in Fixed Effects Regression-State dummies

	II)Degree 1	II)Degree 2	II)Degree 3	II)Degree 4	II)Degree 5
EFI	0.154	0.994	2.293	-4.713	-4.745
	(1.011)	(1.285)	(2.531)	(2.912)	(6.602)
	0.879	0.443	0.370	0.112	0.476
Income	-0.000	-0.000	-0.000	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.288	0.220	0.164	0.070	0.105
Education	-0.019	-0.019	-0.020	-0.017	-0.017
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
	0.197	0.184	0.162	0.242	0.231
Manufacture	-2.676	-3.157	-3.134	-3.624	-3.627
	(2.663)	(2.801)	(2.786)	(2.721)	(2.909)
	0.320	0.265	0.266	0.189	0.218
EFI^2		-1.007	-4.710	37.993**	38.249
		(1.360)	(6.891)	(15.619)	(58.314)
		0.463	0.498	0.019	0.515
EFI^3			3.351	-91.316**	-92.237
			(5.734)	(37.261)	(214.196)
			0.562	0.018	0.669
EFI^4				69.788**	71.251
				(28.897)	(338.632)
				0.020	0.834
EFI^5					-0.852
					(194.918)
					0.997
adjRsquared	0.17	0.17	0.17	0.22	0.21
AIC	-238.9	-237.7	-236.1	-241.2	-237.2
BIC	-228.6	-224.8	-220.6	-223.1	-213.9
RootMSE	0.07	0.07	0.07	0.07	0.07
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 3: Selection of Polynomial Degree for EFI in Fixed Effects Regression-State & Time dummies

	III) Degree 1	III) Degree 2	III) Degree 3	III) Degree 4	III) Degree 5
EFI	0.385	1.085	2.672	-4.496	-4.511
	(1.018)	(1.338)	(2.871)	(3.437)	(6.668)
	0.707	0.421	0.357	0.197	0.502
Income	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.983	0.889	0.882	0.454	0.477
Education	-0.016	-0.016	-0.017	-0.016	-0.016
	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)
	0.358	0.329	0.307	0.323	0.313
Manufacture	-2.354	-2.810	-2.740	-3.534	-3.535
	(2.758)	(2.847)	(2.828)	(2.804)	(2.975)
	0.398	0.329	0.338	0.214	0.241
EFI^2		-0.873	-5.348	37.010**	37.135
		(1.311)	(7.379)	(16.082)	(57.861)
		0.509	0.472	0.026	0.524
EFI^3			4.065	-89.280**	-89.729
			(6.262)	(36.169)	(213.462)
			0.519	0.017	0.676
EFI^4				68.395**	69.107
				(27.402)	(339.409)
				0.016	0.840
EFI^5					-0.414
					(196.224)
					0.998
adjRsquared	0.17	0.17	0.16	0.21	0.20
AIC	-237.8	-236.4	-234.9	-239.2	-237.2
BIC	-224.9	-220.9	-216.8	-218.6	-214.0
RootMSE	0.07	0.07	0.07	0.07	0.07
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 4: Selection of Polynomial Degree for RFI in Pooled Regression

	I) Degree 1	I) Degree 2	I) Degree 3	I) Degree 4	I) Degree 5
RFI	0.153	0.166	3.875	-7.768	51.373
	(0.112)	(0.594)	(2.711)	(10.499)	(41.221)
	0.180	0.781	0.159	0.463	0.219
Income	-0.000	-0.000	-0.000*	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.106	0.104	0.059	0.089	0.101
Education	-0.011	-0.011	-0.010	-0.011	-0.009
	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)
	0.126	0.117	0.166	0.166	0.226
Manufacture	-1.438**	-1.437**	-1.468**	-1.419**	-1.358**
	(0.625)	(0.630)	(0.641)	(0.627)	(0.603)
	0.026	0.027	0.026	0.028	0.029
RFI^2		-0.011	-6.889	27.521	-215.349
		(0.546)	(5.272)	(32.051)	(172.605)
		0.984	0.198	0.395	0.218
RFI^3			3.924	-38.006	429.322
			(3.149)	(40.409)	(338.814)
			0.219	0.352	0.211
RFI^4				18.111	-408.258
				(18.056)	(315.411)
				0.321	0.202
RFI^5					148.913
					(112.405)
					0.192
adjRsquared	0.15	0.14	0.14	0.14	0.15
AIC	-67.2	-65.2	-64.8	-63.8	-63.7
BIC	-54.3	-49.7	-46.7	-43.1	-40.5
RootMSE	0.17	0.17	0.17	0.17	0.17
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 5: Selection of Polynomial Degree for RFI in Fixed Effects Regression-State dummies

	II) Degree 1	II) Degree 2	II) Degree 3	II) Degree 4	II) Degree 5
RFI	0.009	-5.800**	7.330	-21.263***	21.136
	(0.536)	(2.219)	(7.628)	(7.829)	(44.951)
	0.986	0.012	0.341	0.009	0.640
Income	-0.000	-0.000*	-0.000**	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.137	0.086	0.041	0.048	0.049
Education	-0.019	-0.023	-0.021	-0.023	-0.023*
	(0.015)	(0.015)	(0.015)	(0.014)	(0.013)
	0.233	0.142	0.151	0.101	0.081
Manufacture	-2.681	-2.897	-2.924	-2.782*	-2.600
	(2.674)	(2.075)	(1.770)	(1.597)	(1.651)
	0.321	0.169	0.105	0.088	0.122
RFI^2		4.247**	-17.036	67.092**	-118.236
		(1.621)	(11.809)	(25.869)	(201.612)
		0.012	0.156	0.013	0.560
RFI^3			11.193*	-90.493**	276.691
			(6.115)	(34.956)	(407.256)
			0.073	0.013	0.500
RFI^4				43.670**	-296.341
				(16.483)	(383.395)
				0.011	0.443
RFI^5					119.835
					(137.335)
					0.387
adjRsquared	0.17	0.24	0.26	0.29	0.29
AIC	-238.9	-245.6	-247.9	-249.0	-250.3
BIC	-228.5	-232.7	-232.4	-228.3	-229.6
RootMSE	0.07	0.07	0.07	0.07	0.07
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 6: Selection of Polynomial Degree for RFI in Fixed Effects Regression-State & Time dummies

	III)Degree 1	III)Degree 2	III)Degree 3	III)Degree 4	III)Degree 5
RFI	0.192	-5.801***	6.971	-24.288***	27.380
	(0.722)	(2.082)	(7.746)	(8.134)	(46.816)
	0.791	0.008	0.373	0.004	0.561
Income	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.912	0.807	0.931	0.795	0.743
Education	-0.016	-0.020	-0.019	-0.019	-0.020
	(0.017)	(0.017)	(0.016)	(0.015)	(0.015)
	0.349	0.246	0.258	0.211	0.190
Manufacture	-2.367	-2.490	-2.546	-2.290	-2.001
	(2.804)	(2.203)	(1.919)	(1.731)	(1.824)
	0.403	0.264	0.191	0.192	0.278
RFI^2		4.424***	-16.290	75.599***	-150.869
		(1.552)	(12.138)	(26.535)	(211.069)
		0.006	0.186	0.006	0.478
RFI^3			10.887*	-100.020***	349.640
			(6.300)	(35.541)	(430.197)
			0.090	0.007	0.420
RFI^4				47.596***	-369.436
				(16.740)	(408.286)
				0.007	0.370
RFI^5					147.163
					(147.278)
					0.323
adjRsquared	0.17	0.24	0.26	0.30	0.31
AIC	-237.7	-245.3	-247.3	-249.4	-249.3
BIC	-224.8	-229.7	-229.2	-226.1	-223.5
RootMSE	0.07	0.07	0.07	0.06	0.06
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 7: Selection of Polynomial Degree for RPI in Pooled Regression

	I) Degree 1	I) Degree 2	I) Degree 3	I) Degree 4	I) Degree 5
RPI	0.024	-5.055**	2.103	-170.334*	-1261.059***
	(0.273)	(2.140)	(13.843)	(89.353)	(332.177)
	0.931	0.022	0.880	0.063	0.000
Income	-0.000**	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.049	0.131	0.137	0.129	0.298
Education	-0.010	-0.010	-0.010	-0.009	-0.012*
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
	0.169	0.179	0.168	0.174	0.087
Manufacture	-1.454**	-1.202**	-1.203**	-1.083**	-0.718
	(0.663)	(0.573)	(0.571)	(0.538)	(0.530)
	0.033	0.041	0.040	0.050	0.182
RPI^2		4.781**	-8.639	475.476*	4607.904***
		(1.950)	(24.423)	(250.279)	(1234.100)
		0.018	0.725	0.063	0.001
RPI^3			8.179	-582.034*	-8267.546***
			(14.057)	(305.320)	(2252.394)
			0.563	0.063	0.001
RPI^4				264.011*	7284.146***
				(136.986)	(2022.267)
				0.060	0.001
RPI^5					-2520.762***
					(715.298)
					0.001
adjRsquared	0.13	0.20	0.20	0.25	0.30
AIC	-65.6	-73.0	-71.5	-76.6	-87.1
BIC	-52.7	-57.5	-53.4	-56.0	-69.0
RootMSE	0.17	0.16	0.16	0.16	0.15
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 8: Selection of Polynomial Degree for RPI in Fixed Effects Regression-State dummies

	II) Degree 1	II) Degree 2	II) Degree 3	II) Degree 4	II) Degree 5
RPI	-0.680*	-6.701**	-22.161*	-21.911	-1390.161***
	(0.396)	(2.842)	(11.938)	(70.779)	(455.113)
	0.092	0.022	0.070	0.758	0.004
Income	-0.000**	-0.000**	-0.000*	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.018	0.033	0.088	0.083	0.236
Education	-0.024	-0.025*	-0.027**	-0.027**	-0.032***
	(0.016)	(0.013)	(0.012)	(0.013)	(0.011)
	0.131	0.054	0.030	0.039	0.004
Manufacture	-2.523	-2.525	-2.451	-2.450	-3.321
	(2.399)	(1.645)	(1.649)	(1.709)	(2.185)
	0.298	0.131	0.144	0.158	0.135
RPI^2		5.401**	33.293	32.595	5174.390***
		(2.575)	(20.778)	(191.461)	(1684.334)
		0.041	0.116	0.866	0.003
RPI^3			-16.307	-15.465	-9494.857***
			(11.909)	(226.745)	(3061.237)
			0.177	0.946	0.003
RPI^4				-0.373	8580.588***
				(99.015)	(2733.859)
				0.997	0.003
RPI^5					-3053.147***
					(960.349)
					0.003
adjRsquared	0.21	0.30	0.32	0.31	0.45
AIC	-242.8	-254.3	-256.1	-252.1	-274.4
BIC	-232.5	-241.4	-240.6	-231.5	-253.8
RootMSE	0.07	0.06	0.06	0.06	0.06
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 9: Selection of Polynomial Degree for RPI in Fixed Effects Regression-State & Time dummies

	III) Degree 1	III) Degree 2	III) Degree 3	III) Degree 4	III) Degree 5
RPI	-0.992*	-6.635**	-23.945*	-14.891	-1323.706***
	(0.519)	(2.960)	(12.876)	(63.054)	(457.313)
	0.062	0.030	0.069	0.814	0.006
Income	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.599	0.713	0.542	0.539	0.726
Education	-0.020	-0.022	-0.023	-0.023	-0.030**
	(0.017)	(0.015)	(0.014)	(0.015)	(0.013)
	0.252	0.135	0.102	0.122	0.025
Manufacture	-1.793	-1.956	-1.772	-1.735	-2.888
	(2.472)	(1.824)	(1.829)	(1.851)	(2.315)
	0.472	0.289	0.337	0.353	0.218
RPI^2		5.124*	36.324	11.105	4927.344***
		(2.698)	(22.507)	(170.084)	(1695.739)
		0.064	0.113	0.948	0.006
RPI^3			-18.270	12.213	-9045.965***
			(13.064)	(201.440)	(3085.631)
			0.168	0.952	0.005
RPI^4				-13.500	8180.796***
				(88.194)	(2757.211)
				0.879	0.005
RPI^5					-2913.467***
					(968.501)
					0.004
adjRsquared	0.23	0.31	0.34	0.33	0.45
AIC	-244.4	-254.8	-257.7	-253.7	-271.7
BIC	-231.5	-239.3	-239.6	-230.5	-245.9
RootMSE	0.07	0.06	0.06	0.06	0.06
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 10: Selection of Polynomial Degree for EPI in Pooled Regression

	I) Degree 1	I) Degree 2	I) Degree 3	I) Degree 4	I) Degree 5
EPI	0.007	0.152	1.218	0.842	7.593
	(0.115)	(0.362)	(1.401)	(3.211)	(7.989)
	0.955	0.677	0.389	0.794	0.347
Income	-0.000*	-0.000*	-0.000*	-0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.081	0.074	0.079	0.080	0.081
Education	-0.010	-0.010	-0.011	-0.011	-0.010
	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)
	0.271	0.238	0.213	0.205	0.246
Manufacture	-1.454**	-1.526**	-1.569**	-1.587**	-1.597**
	(0.617)	(0.666)	(0.667)	(0.705)	(0.712)
	0.023	0.026	0.023	0.029	0.030
EPI^2		-0.142	-2.541	-1.165	-36.060
		(0.393)	(3.249)	(11.666)	(41.614)
		0.720	0.438	0.921	0.391
EPI^3			1.556	-0.394	79.143
			(2.172)	(16.813)	(95.508)
			0.477	0.981	0.411
EPI^4				0.940	-81.529
				(8.410)	(99.577)
				0.911	0.417
EPI^5					31.783
					(38.590)
					0.414
adjRsquared	0.13	0.12	0.12	0.11	0.11
AIC	-65.6	-63.7	-62.6	-60.6	-59.4
BIC	-52.7	-48.2	-44.5	-39.9	-36.2
RootMSE	0.17	0.17	0.17	0.17	0.17
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 11: Selection of Polynomial Degree for EPI in Fixed Effects Regression-State dummies

	II) Degree 1	II) Degree 2	II) Degree 3	II) Degree 4	II) Degree 5
EPI	0.311	1.002	-1.454	-4.492	11.362
	(0.551)	(1.114)	(1.464)	(3.243)	(10.446)
	0.575	0.373	0.325	0.172	0.282
Income	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.136	0.200	0.280	0.284	0.268
Education	-0.018	-0.020	-0.018	-0.019	-0.017
	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)
	0.200	0.155	0.200	0.171	0.212
Manufacture	-2.973	-3.154	-3.413	-3.725	-3.045
	(2.874)	(2.860)	(2.801)	(2.840)	(2.713)
	0.306	0.276	0.229	0.196	0.267
EPI^2		-0.822	4.712	18.088	-79.266
		(1.226)	(3.209)	(15.325)	(63.653)
		0.506	0.149	0.244	0.219
EPI^3			-3.976	-25.729	226.840
			(2.693)	(25.774)	(158.928)
			0.146	0.323	0.160
EPI^4				11.730	-282.034
				(14.000)	(177.718)
				0.406	0.119
EPI^5					125.866*
					(73.672)
					0.094
adjRsquared	0.18	0.18	0.19	0.19	0.24
AIC	-239.3	-238.3	-238.7	-238.0	-243.7
BIC	-229.0	-225.3	-223.2	-219.9	-223.0
RootMSE	0.07	0.07	0.07	0.07	0.07
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 12: Selection of Polynomial Degree for EPI in Fixed Effects Regression-State & Time dummies

	III) Degree 1	III) Degree 2	III) Degree 3	III) Degree 4	III) Degree 5
EPI	0.306	0.956	-1.333	-4.338	11.580
	(0.549)	(1.085)	(1.700)	(3.272)	(10.524)
	0.580	0.383	0.437	0.191	0.277
Income	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.906	0.926	0.822	0.792	0.807
Education	-0.016	-0.017	-0.017	-0.018	-0.016
	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)
	0.356	0.298	0.313	0.272	0.317
Manufacture	-2.711	-2.905	-3.269	-3.605	-2.904
	(2.970)	(2.935)	(2.889)	(2.923)	(2.794)
	0.366	0.327	0.263	0.223	0.304
EPI^2		-0.773	4.411	17.591	-80.072
		(1.196)	(3.590)	(15.107)	(64.147)
		0.521	0.225	0.250	0.218
EPI^3			-3.742	-25.122	228.132
			(2.869)	(25.460)	(160.421)
			0.198	0.329	0.161
EPI^4				11.503	-282.978
				(13.913)	(179.556)
				0.412	0.122
EPI^5					126.157*
					(74.460)
					0.097
adjRsquared	0.17	0.17	0.18	0.18	0.24
AIC	-238.0	-236.8	-236.9	-236.0	-241.8
BIC	-225.1	-221.3	-218.8	-215.4	-218.5
RootMSE	0.07	0.07	0.07	0.07	0.07
No. of Obs	98	98	98	98	98

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 13: Selection of Polynomial Degree for RFI in Pooled Regression (W/o outliers)

	I) Degree 1	I) Degree 2	I) Degree 3	I) Degree 4	I) Degree 5
RFI	0.116	-0.399	6.813	-36.125	276.893*
	(0.141)	(1.071)	(6.195)	(36.632)	(142.943)
	0.416	0.711	0.277	0.329	0.059
Income	-0.000	-0.000*	-0.000*	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.119	0.094	0.078	0.111	0.103
Education	-0.010	-0.010	-0.011	-0.010	-0.009
	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)
	0.162	0.165	0.164	0.202	0.204
Manufacture	-1.426**	-1.449**	-1.449**	-1.374**	-1.345**
	(0.629)	(0.631)	(0.640)	(0.610)	(0.589)
	0.028	0.026	0.028	0.029	0.027
RFI^2		0.390	-11.484	97.429	-975.168*
		(0.864)	(10.499)	(94.561)	(504.465)
		0.654	0.280	0.308	0.059
RFI^3			6.244	-112.065	1673.027*
			(5.677)	(104.712)	(866.009)
			0.277	0.290	0.059
RFI^4				46.707	-1400.764*
				(42.192)	(724.492)
				0.274	0.059
RFI^5					458.748*
					(236.746)
					0.059
adjRsquared	0.12	0.11	0.12	0.12	0.14
AIC	-64.0	-62.2	-61.6	-60.9	-66.1
BIC	-51.2	-46.9	-43.6	-40.4	-48.2
RootMSE	0.17	0.17	0.17	0.17	0.17
No. of Obs	96	96	96	96	96

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 14: Selection of Polynomial Degree for RFI in Fixed Effects Regression-State dummies (W/o outliers)

	II)Degree 1	II)Degree 2	II)Degree 3	II)Degree 4	II)Degree 5
RFI	-0.008	-5.990**	20.034	-49.506	112.614
	(0.535)	(2.581)	(12.600)	(67.990)	(199.410)
	0.988	0.025	0.119	0.470	0.575
Income	-0.000	-0.000*	-0.000*	-0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.200	0.097	0.062	0.056	0.058
Education	-0.020	-0.023	-0.022	-0.023*	-0.023*
	(0.016)	(0.015)	(0.014)	(0.013)	(0.013)
	0.213	0.146	0.126	0.093	0.079
Manufacture	-2.708	-2.897	-2.951*	-2.673	-2.628
	(2.647)	(2.066)	(1.636)	(1.637)	(1.677)
	0.312	0.167	0.078	0.109	0.124
RFI^2		4.390**	-36.057*	134.290	-415.070
		(1.899)	(19.150)	(162.889)	(653.791)
		0.025	0.066	0.414	0.529
RFI^3			20.483**	-159.847	747.988
			(9.651)	(169.844)	(1058.161)
			0.039	0.351	0.483
RFI^4				70.000	-663.365
				(65.421)	(845.758)
				0.290	0.437
RFI^5					232.197
					(267.122)
					0.389
adjRsquared	0.17	0.23	0.27	0.28	0.29
AIC	-232.6	-238.5	-243.6	-244.0	-243.2
BIC	-222.3	-225.7	-228.2	-226.1	-222.7
RootMSE	0.07	0.07	0.07	0.07	0.07
No. of Obs	96	96	96	96	96

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 15: Selection of Polynomial Degree for RFI in Fixed Effects Regression-State & Time dummies (W/o outliers)

	III) Degree 1	III) Degree 2	III) Degree 3	III) Degree 4	III) Degree 5
RFI	0.201	-5.883**	20.792*	-53.348	188.100
	(0.723)	(2.402)	(11.819)	(68.964)	(204.541)
	0.783	0.018	0.085	0.443	0.362
Income	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.818	0.820	0.818	0.811	0.651
Education	-0.017	-0.020	-0.019	-0.020	-0.019
	(0.017)	(0.017)	(0.016)	(0.015)	(0.015)
	0.325	0.247	0.240	0.200	0.204
Manufacture	-2.349	-2.494	-2.508	-2.175	-1.965
	(2.775)	(2.204)	(1.770)	(1.780)	(1.841)
	0.402	0.264	0.163	0.228	0.291
RFI^2		4.484**	-36.947**	144.749	-674.164
		(1.775)	(18.303)	(166.163)	(685.591)
		0.015	0.049	0.388	0.330
RFI^3			20.986**	-171.393	1183.537
			(9.343)	(173.937)	(1133.152)
			0.029	0.329	0.302
RFI^4				74.693	-1021.177
				(67.213)	(922.604)
				0.272	0.274
RFI^5					347.400
					(296.098)
					0.247
adjRsquared	0.17	0.23	0.28	0.29	0.30
AIC	-231.7	-238.0	-243.6	-242.4	-243.0
BIC	-218.9	-222.7	-225.6	-219.4	-217.3
RootMSE	0.07	0.07	0.07	0.07	0.06
No. of Obs	96	96	96	96	96

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 16: Selection of Polynomial Degree for RPI in Pooled Regression (W/o outliers)

	I) Degree 1	I) Degree 2	I) Degree 3	I) Degree 4	I) Degree 5
RPI	-0.018	-5.727***	0.446	-167.081*	-1189.813***
	(0.286)	(2.029)	(13.095)	(85.436)	(336.755)
	0.949	0.007	0.973	0.056	0.001
Income	-0.000*	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.057	0.148	0.157	0.137	0.283
Education	-0.009	-0.009	-0.009	-0.009	-0.011
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
	0.201	0.225	0.212	0.218	0.112
Manufacture	-1.445**	-1.168**	-1.168**	-1.062*	-0.729
	(0.656)	(0.571)	(0.568)	(0.541)	(0.533)
	0.032	0.047	0.045	0.056	0.178
RPI^2		5.347***	-6.201	463.819*	4336.271***
		(1.843)	(23.119)	(240.283)	(1251.338)
		0.006	0.790	0.060	0.001
RPI^3			7.025	-565.586*	-7762.573***
			(13.313)	(294.042)	(2283.959)
			0.600	0.060	0.001
RPI^4				255.941*	6825.080***
				(132.239)	(2050.679)
				0.059	0.002
RPI^5					-2357.137***
					(725.415)
					0.002
adjRsquared	0.12	0.21	0.20	0.24	0.29
AIC	-63.4	-72.6	-71.0	-75.6	-82.8
BIC	-50.5	-57.2	-53.1	-55.1	-62.3
RootMSE	0.17	0.16	0.16	0.16	0.15
No. of Obs	96	96	96	96	96

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 17: Selection of Polynomial Degree for RPI in Fixed Effects Regression-State dummies (W/o outliers)

	II) Degree 1	II) Degree 2	II) Degree 3	II) Degree 4	II) Degree 5
RPI	-0.647	-6.904**	-24.512*	-36.593	-1454.171***
	(0.415)	(3.059)	(13.467)	(81.736)	(437.512)
	0.126	0.029	0.075	0.656	0.002
Income	-0.000**	-0.000**	-0.000*	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.038	0.042	0.082	0.088	0.162
Education	-0.024	-0.025*	-0.027**	-0.027**	-0.033***
	(0.016)	(0.013)	(0.012)	(0.013)	(0.010)
	0.129	0.055	0.030	0.037	0.003
Manufacture	-2.542	-2.502	-2.390	-2.424	-3.311
	(2.402)	(1.630)	(1.614)	(1.719)	(2.219)
	0.295	0.131	0.145	0.165	0.142
RPI^2		5.545**	37.055	70.468	5390.072***
		(2.717)	(22.929)	(218.503)	(1620.308)
		0.047	0.113	0.749	0.002
RPI^3			-18.325	-58.495	-9853.985***
			(12.918)	(256.391)	(2947.004)
			0.163	0.821	0.002
RPI^4				17.708	8875.686***
				(111.086)	(2633.671)
				0.874	0.002
RPI^5					-3148.900***
					(925.758)
					0.001
adjRsquared	0.20	0.29	0.32	0.31	0.45
AIC	-235.8	-247.1	-249.6	-245.7	-269.1
BIC	-225.6	-234.3	-234.3	-225.2	-248.6
RootMSE	0.07	0.07	0.06	0.06	0.06
No. of Obs	96	96	96	96	96

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Appendix 18: Selection of Polynomial Degree for RPI in Fixed Effects Regression-State & Time dummies (W/o outliers)

	III)Degree 1	III)Degree 2	III)Degree 3	III)Degree 4	III)Degree 5
RPI	-0.954*	-6.795**	-26.109*	-28.033	-1392.213***
	(0.535)	(3.164)	(14.250)	(73.679)	(450.242)
	0.081	0.037	0.073	0.705	0.003
Income	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.575	0.740	0.574	0.579	0.837
Education	-0.020	-0.022	-0.023	-0.023	-0.031**
	(0.017)	(0.014)	(0.014)	(0.015)	(0.013)
	0.247	0.136	0.103	0.117	0.020
Manufacture	-1.810	-1.946	-1.728	-1.735	-2.930
	(2.475)	(1.812)	(1.795)	(1.859)	(2.355)
	0.468	0.288	0.341	0.355	0.220
RPI^2		5.241*	39.786	45.111	5160.949***
		(2.833)	(24.411)	(196.339)	(1670.508)
		0.071	0.110	0.819	0.003
RPI^3			-20.121	-26.528	-9439.435***
			(13.940)	(230.236)	(3041.321)
			0.156	0.909	0.003
RPI^4				2.826	8507.821***
				(99.917)	(2718.838)
				0.978	0.003
RPI^5					-3020.771***
					(955.381)
					0.003
adjRsquared	0.22	0.30	0.33	0.33	0.45
AIC	-237.5	-247.5	-251.0	-249.0	-268.1
BIC	-224.6	-232.1	-233.1	-228.5	-245.1
RootMSE	0.07	0.07	0.06	0.06	0.06
No. of Obs	96	96	96	96	96

Robust standard errors in parentheses.
* p<0.10, ** p<0.05, *** p<0.010

Table 1
Ethnic and religious polarization and corruption

	EPI			RPI			EPI and RPI		
	I	II	III	I	II	III	I	II	III
Constant	0.861	0.854	1.148	0.801	0.805	1.335	0.636	0.813	1.117
	(0.205)***	(0.213)***	(0.319)***	(0.219)***	(0.259)***	(0.335)***	(0.218)***	(0.214)***	(0.296)***
EPI	0.178	0.294	0.249				0.148	0.284	0.243
	(0.074)**	(0.079)***	(0.086)***				(0.077)*	(0.085)***	(0.093)**
RPI				0.358	0.275	0.189	0.273	0.051	0.034
				(0.152)**	(0.147)*	(0.144)	(0.152)*	(0.145)	(0.139)
Education	−0.587	−0.241	−0.745	−0.743	−0.587	−1.367	−0.471	−0.235	−0.736
	(0.258)**	(0.304)	(0.535)	(0.241)***	(0.313)*	(0.499)***	(0.263)*	(0.306)	(0.530)
Manufacture	−0.402	−0.707	−0.794	−0.587	−0.814	−0.942	−0.354	−0.691	−0.782
	(0.356)	(0.374)*	(0.381)**	(0.329)*	(0.405)**	(0.393)**	(0.352)	(0.368)*	(0.372)**
Income	−0.044	−0.087	−0.071	−0.026	−0.032	−0.018	−0.047	−0.085	−0.070
	(0.025)*	(0.029)***	(0.034)**	(0.023)	(0.028)	(0.029)	(0.025)*	(0.029)***	(0.035)**
Region dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time dummy	No	No	Yes	No	No	Yes	No	No	Yes
Observations	96	96	96	96	96	96	96	96	96
R-squared	0.28	0.39	0.40	0.27	0.30	0.35	0.30	0.39	0.40

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

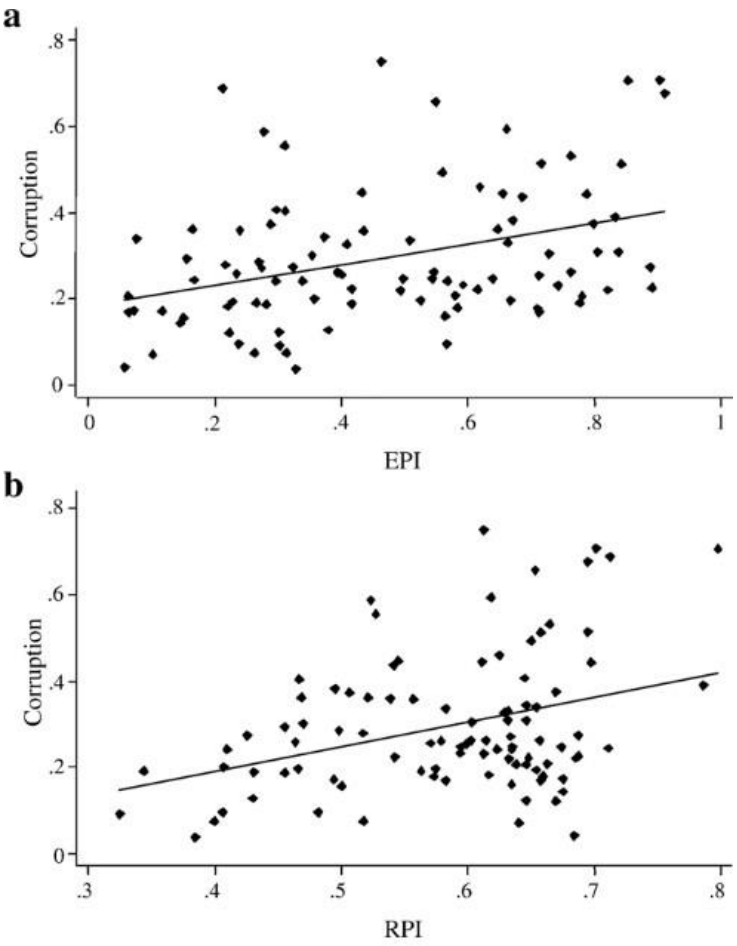

Fig. 1. a. EPI and Corruption. b. RPI and Corruption.

Table 2
Ethnic and religious fractionalization and corruption

	EFI			RFI			EFI and RFI		
	I	II	III	I	II	III	I	II	III
Constant	0.869	0.855	1.194	0.871	0.785	1.243	0.604	0.687	0.990
	(0.201)***	(0.214)***	(0.337)***	(0.218)***	(0.264)***	(0.351)***	(0.219)***	(0.247)***	(0.345)***
EFI	0.892	1.324	1.235				1.343	1.425	1.344
	(0.347)**	(0.383)***	(0.390)***				(0.385)***	(0.387)***	(0.394)***
EFI^2	−1.112	−1.522	−1.508				−2.021	−1.929	−1.893
	(0.586)*	(0.653)**	(0.633)**				(0.658)***	(0.674)***	(0.660)***
RFI				1.148	1.013	0.759	1.321	0.859	0.792
				(0.396)***	(0.377)***	(0.401)*	(0.436)***	(0.436)*	(0.435)*
RFI^2				−1.116	−1.124	−0.878	−1.338	−0.981	−0.914
				(0.383)***	(0.375)***	(0.388)**	(0.409)***	(0.434)**	(0.425)**
Education	−0.635	−0.242	−0.824	−0.757	−0.492	−1.158	−0.439	−0.199	−0.692
	(0.258)**	(0.324)	(0.572)	(0.233)***	(0.313)	(0.496)**	(0.266)	(0.345)	(0.570)
Manufacture	−0.458	−0.735	−0.853	−0.749	−0.973	−1.050	−0.668	−0.902	−0.994
	(0.382)	(0.390)*	(0.403)**	(0.334)**	(0.409)**	(0.400)**	(0.399)*	(0.420)**	(0.430)**
Income	−0.048	−0.101	−0.082	−0.042	−0.046	−0.033	−0.080	−0.102	−0.086
	(0.026)*	(0.032)***	(0.038)**	(0.026)	(0.027)*	(0.029)	(0.030)***	(0.033)***	(0.039)**
Region dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time dummy	No	No	Yes	No	No	Yes	No	No	Yes
Observations	96	96	96	96	96	96	96	96	96
R-squared	0.29	0.40	0.41	0.28	0.36	0.38	0.37	0.44	0.46

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

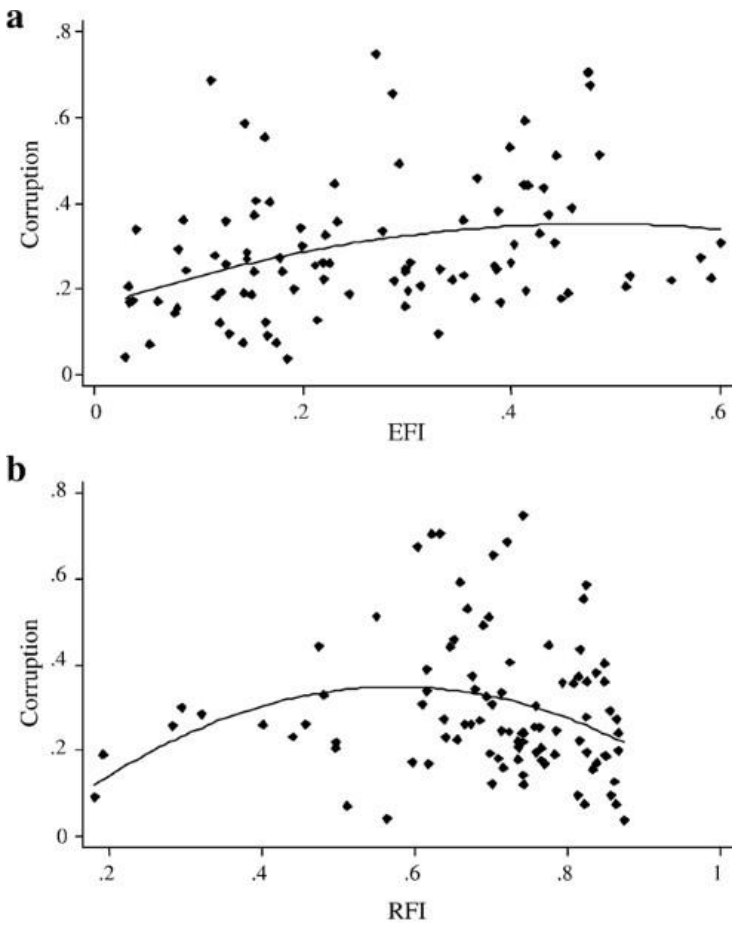

Fig. 2. a. EFI and Corruption. b. RFI and Corruption.

Table 3
Ethnic and religious fractionalization and corruption (outliers excluded)

	EFI			RFI			EFI and RFI		
	I	II	III	I	II	III	I	II	III
Constant	0.850	0.867	1.247	0.921	0.929	1.320	0.738	0.778	1.047
	(0.202)***	(0.218)***	(0.349)***	(0.237)***	(0.257)***	(0.344)***	(0.224)***	(0.239)***	(0.339)***
EFI	0.900	1.329	1.233				1.373	1.404	1.329
	(0.348)**	(0.384)***	(0.393)***				(0.387)***	(0.384)***	(0.392)***
EFI^2	−1.131	−1.519	−1.503				−2.037	−1.907	−1.879
	(0.587)*	(0.656)**	(0.636)**				(0.662)***	(0.669)***	(0.656)***
RFI				0.999	0.451	0.442	0.867	0.522	0.589
				(0.505)*	(0.512)	(0.529)	(0.561)	(0.501)	(0.547)
RFI^2				−1.009	−0.764	−0.674	−1.010	−0.768	−0.785
				(0.447)**	(0.418)*	(0.428)	(0.487)**	(0.446)*	(0.463)*
Education	−0.607	−0.256	−0.909	−0.745	−0.408	−1.111	−0.379	−0.155	−0.677
	(0.264)**	(0.327)	(0.593)	(0.238)***	(0.335)	(0.556)**	(0.279)	(0.362)	(0.626)
Manufacture	−0.452	−0.753	−0.894	−0.754	−0.947	−1.039	−0.653	−0.892	−0.993
	(0.381)	(0.393)*	(0.408)**	(0.335)**	(0.409)**	(0.402)**	(0.397)	(0.419)**	(0.432)**
Income	−0.049	−0.101	−0.079	−0.043	−0.051	−0.035	−0.088	−0.104	−0.086
	(0.027)*	(0.033)***	(0.039)**	(0.027)	(0.028)*	(0.031)	(0.032)***	(0.034)***	(0.042)**
Region dummies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time dummy	No	No	Yes	No	No	Yes	No	No	Yes
Observations	94	94	94	94	94	94	94	94	94
R-squared	0.27	0.39	0.41	0.27	0.35	0.38	0.36	0.44	0.45

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

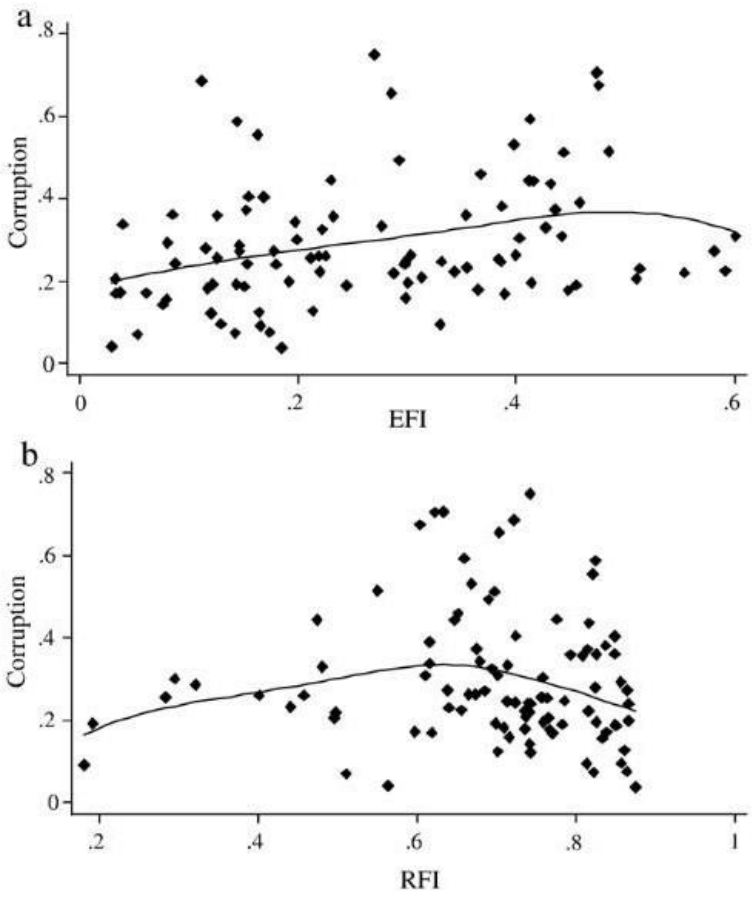

Fig. 3. a. Kernel Regression: EFI and Corruption. b. Kernel Regression: RFI and Corruption.