CHALLENGING PATRONAGE NETWORKS AND CORRUPTION IN IRAQ: A SOCIAL ACCOUNTING MATRIX ANALYSIS OF CITIZEN-BASED OIL REVENUE DISTRIBUTION

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ABSTRACT

Iraq is a country with exceptional natural resource wealth, but also consistent political turbulence manifested by high levels of state corruption, patronage networks, weak governance, poor institutional quality, civil unrest and sectarian conflict, all of which have undermined the sovereignty of its vast petroleum wealth and limited its potential for economic prosperity. As a mechanism for reducing the high levels of corruption and patronage networks as well as stimulating economic activity, this dissertation proposes the use of citizen-based direct distribution of oil revenues and studies the economic impacts of this policy using Social Accounting Matrix analysis.

The methodology for this analysis includes testing the policy at different levels of per capita distribution, as well as with three variations in the design of the distribution programs. These variations include a universal cash transfer funded by oil revenue surpluses, a targeted cash transfer funded by oil revenue surpluses and a universal cash transfer funded by the reallocation of funding from the existing food subsidy system. The results illustrate that in each of the scenario variations, cash transfers are shown to have a significant positive impact on household incomes, producing activities and aggregate demand in the economy. The results also illustrate a net welfare gain to households when replacing the existing food subsidy system with cash transfers.

In the comparison of distribution variations, targeted programs are shown to have the largest effect on the economy, primarily as lower-income households were allocated a greater proportion of income and subsequently also spend a greater proportion of their income on goods with lower leakages. Higher-income households, who are non-recipients in the targeted programs, benefit from targeted programs through the indirect/induced effects, which are largest in comparison to the other distribution variations. The results also show increased consumption on essential goods & services, primarily agricultural produce, which would ease concerns that cash transfers may generate increased consumption on non-essential/temptation goods.

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LIST OF ABBREVIATIONS

APFD	ALASKAN PERMANENT FUND DIVIDEND
BDOC	BRITISH OIL DEVELOPMENT COMPANY
CPA	COALITION PROVISIONAL AUTHORITY
CMP	CHILD MONEY PROGRAM
GDP	GROSS DOMESTIC PRODUCT
HDF	HUMAN DEVELOPMENT FUND
HHI	HOUSEHOLD INCOME
IDP	INTERNALLY DISPLACED PERSON
IOM	INTERNATIONAL ORGANIZATION FOR MIGRATION
INOC	IRAQI NATIONAL OIL COMPANY
IOC	IRAQ OIL COMPANY
IPC	IRAQI PETROLEUM COMPANY
ISIL	ISLAMIC STATE IN IRAQ AND LEVANT
ISIS	ISLAMIC STATE IN IRAQ AND SYRIA
KRG	KURDISH REGIONAL GOVERNMENT
MMBD	MILLIONS OF BARRELS PER DAY
MDF	MONGOLAIN DEVELOPMENT FUND
OPEC	ORGANIZATION OF PETROLEUM EXPORTING COUNTRIES
PCI	PER CAPITA INCOME
PDS	PUBLIC DISTRIBUTION SYSTEM
PSC	PRODUCTION SHARING CONTRACT
SAM	SOCIAL ACCOUNTING MATRIX
SWF	SOVERIEGN WEALTH FUND
TPC	TURKISH PETROLEUM COMPANY
UN	UNITED NATIONS
US	UNITED STATES OF AMERICA

CHAPTER 1

1.1 INTRODUCTION & BACKGROUND

The presence of significant natural resource endowments has made Iraq considerably wealthy, but also simultaneously contributed to a history of political instability and sectarian violence. Iraq's vast hydrocarbon wealth has not only extensively shaped the dynamics of the economic environment but has also exerted considerable influence over political, social and cultural elements in the country. While resource-based wealth offers potentially beneficial opportunities, it also poses extensive and complex challenges to a country. The natural resources of a country are the sovereign property of its citizens. When managed efficiently, potential exists to develop a competitive advantage and stimulate economic growth and development. However, corrupt governments often seek to prioritize the exploitation of natural resources for the consolidation of power and private gain, and ultimately descend into authoritarianism, internal conflict and economic stagnation, as manifested by recent events in Iraq (Wahab, 2015). As a mechanism for reducing the high levels of corruption as well as stimulating economic activity, this dissertation proposes the use of citizen-based direct distribution of oil revenues and studies the economic impacts of this policy using Social Accounting Matrix analysis.

Iraq has largely been the victim of a lingering legacy of corruption and patronage, epitomized primarily by the rule of Saddam Hussain and the Ba'athist party. Government corruption in Iraq facilitated the diversion of natural resource revenues into private holdings, primarily into the coffers of senior Ba'athist party members and patronage networks (key proponents) of the Ba'athist party's rule. The U.S.-led incursion of Iraq in 2003, which resulted in the ousting of Saddam Hussain and the Ba'athist party saw the birth of a new political system in Iraq, where political parties contest in elections and federalism offers sub-national groups, specifically the Kurdish Regional Government (KRG), more autonomy (Wahab, 2015). The power sharing system installed by the U.S., which guaranteed the dominant sections of society representation in the political system, proceeded to corrupt public offices and reinforced patterns of patronage, clientelism, and nepotism that have historically been prevalent throughout Iraqi history (Mahdy, 2016). All regions, irrespective of ethnic, cultural or religious orientation have demonstrated political and administrative fractures and weak public institutions, undermined by corruption and abuse of power, which has adversely affected growth and development in the country (Wahab, 2015).

Iraq holds approximately 144 billion barrels of proven crude oil reserves (EIA, 2016). According to the US Energy Information Agency (EIA), these reserve holdings represented almost 18% of proven reserves in the Middle East and just fewer than 10% of global reserves (U.S EIA, 2016). Iraq's oil production is centered around four major refineries; Erbil located in the semi-autonomous Kurdish region; Baiji located in the former militant insurgent occupied central region; Doura located near the capital and government strong hold of Baghdad and finally the Basrah plant, which is arguably the largest producing refinery and located in Southern Iraq, bordering Iran and Kuwait. The July 2014 invasion which saw insurgents capture the cities of Mosul, Kirkuk and oil producing Baiji, had interestingly not

disrupted Iraq's oil supply (U.S EIA, 2016). Despite an initial shock which saw production drop to a 2014 low of just over 3 million barrels a day, it quickly recovered and reached roughly 3.75 million barrels a day by the end of 2014. This is partially due to the oil producing capacity of the Baiji refinery being significantly less than the others, particularly the Doura and Basrah plants which account for more than 70% of oil production (U.S EIA, 2016). Despite a thriving oil sector, the remainder of Iraq's economy outside of hydrocarbons has struggled to add any significant value to the Iraqi economy.

When examining the paradox between Iraq's vast oil wealth but chronic political and economic instability, it lends to the argument that Iraq suffers some of the effects of the natural resource curse. There is an abundance of studies on this phenomenon and proponents of it suggest that generally, over the long run, countries with a greater intensity of natural resource dependence demonstrate slower economic growth rates than resource-poor countries (Ross, 2012, van der Ploeg, 2011 & Frankel, 2010). There are also many paths to which the resource curse has adverse developmental effects, such as weak and unstable political and economic institutions, rent-seeking activities and corruption (Mehlum et al., 2006,). There is also a tendency for entrepreneurship activities being marginalized, with key activities likely being concentrated among wealthy elites and patronage networks (Habibpour & Farzanegan, 2014).

Bjorvatn, Farzanegan & Schneider (2012) suggest that the probability of suffering some of the effects of the natural resource curse is also greater in sectarian societies and states. This is indeed relevant in the case of Iraq, where sectarianism has been a key motive for internal political conflicts, particularly in the post Saddam Hussein era. In more recent times, Iraq's economy has demonstrated a strong recovery, primarily because of its extensive hydrocarbon reserves. However, despite its oil wealth, the non-resource economy remains relatively underdeveloped and incapable of creating enough jobs to sustain its increasing workforce. This has in-turn led to unemployment levels of at least 20%, and a per capita GDP that only regained its 1980 level in 2011 (Agator, 2013). Despite massive investments since the 2003 U.S invasion, Iraq continues to struggle with the efficient delivery of basic services, which has in-part contributed to 23% of Iraqis still living in absolute poverty (UN, 2013).

Iraq's substantial oil wealth has brought with it problems more severe than the resource curse literature dictates. The impacts of corruption and sectarian divides have become national and international security threats (Wahab, 2015). The pillaging of Iraq's natural resource wealth did not only contribute to state failure but also to the emergence of a militant insurgence in Iraq by the fanatic organization known as the Islamic State in Iraq and the Levant (ISIL) or Islamic State in Iraq and Syria (ISIS). ISIS has received widespread focus since their much-publicised occupation of large swaths of territory in Iraq and Syria, most notably Iraq's second largest city of Mosul. By means of illicit oil sales, smuggling and informal taxation, ISIS quickly established itself as the world's wealthiest and most structured insurgent organization. The presence of ISIS has also led to large internal civilian displacements, as well as a growing refugee crisis. With the assistance of coalition forces, Iraq has gradually liberated territories previously

occupied by ISIS. At the time of writing, Iraq had reclaimed all territory previously occupied by ISIS. With an uncertain future facing the Post-ISIS Iraq, the government face a defining period in their leadership, tasked with rebuilding broken institutions, mending sectarian divides and establishing security and stability.

Despite the fight against ISIS creating a measure of unity among Iraq's rival political parties and militant factions, the future of the post-ISIS Iraq remains unpredictable. Crucial to the rebuilding process will be the nature of the policies which are to be introduced, specifically those which seek to mitigate the adverse effects of the natural resource curse, eradicating socio-economic ills and facilitating greater inclusivity. One potential policy option which could address these elements is a citizen-based direct distribution of oil revenues. Discussions on the natural resource curse have progressively attracted more attention in the terrain of policy discussion, with a prominent proposal for avoiding some of the adversities that natural resource wealth can propagate being the direct distribution of resource rents to the population (Hertog, 2016). Citizen-based direct distribution of oil revenues addresses both the developmental and welfare effects of the natural resource curse. The direct distribution of resource revenues has acquired increasing prominence in international academia and policy discussions and has been debated to varying degrees in several literature pieces including Palley (2003); Birdsall and Subramanian (2004); Moss and Young 2009; Moss (2011); Segal (2012), Devarajan (2018) and Devarajan et al. (2011), to name a few.

The successful implementation of a policy of direct distribution relies heavily on the synthesis which exists between the management, governance and administration of such a program. More importantly though, is the stability and political will of the government in facilitating these mechanisms. Gillies (2010) explains that in contexts where resource revenues represent a substantial portion of the economy, allocation decisions both determine and are determined by the prevailing political environment. Furthermore, the interplay between allocative decisions and politics is essential to understanding the policymaking environment, as well as the potential impacts which certain policies can have. It is important to note that a policy of direct distribution does not substitute the need for public investments into infrastructure, human capital, healthcare and education, rather it is a complimentary actor to provide the means to access different levels of goods and services.

While the political leadership in Iraq has evolved, corruption and patronage networks remain deeply entrenched in the ethos. Direct distribution attempts to keep at least a portion of the countries natural resource wealth away from corrupt political elites, confers a more direct share in the management of these revenues to citizens, reduces corruption and imparts greater transparency and accountability on the government. Direct cash transfers to citizens can potentially catalyze a reduction in poverty, help to diversify the economy by creating demand for goods and services at all levels of income, stimulate capital formation, create domestic political constituency for transparency, facilitate popular pressure to discourage insurgency and protect the social contract between the government and its people (West, 2011). A policy of direct distribution can be implemented relatively quickly, with the subsequent impact also being relatively instantaneous. However, direct distribution does not come without administering

complexities and if intended to be successful, will require intertemporal institutional stability, strict adherence to the rule of law and protection from all political pressure (Yacoub, 2015).

1.2 RESEARCH OBJECTIVES

This study aims to contribute to literature on public policy, as well as forming a platform for policy-orientated recommendations with respect to wealth distribution from Iraq's petroleum sector. The primary focus of the background material seeks to provide a broader academic understanding as well as presenting evidence from the pre-and post-democratic era in the country on: (a) the importance of oil to the Iraqi economy, and (b) the mechanisms and extents to which the series of corrupt activities are executed. The key focus of this dissertation will be the nexus between the levels of corruption/patronage networks and the presence of vast natural resource wealth in Iraq, specifically, how political elites have in the past, and continue to exploit sovereign oil wealth for personal enrichment and the consolidation of power through various mechanisms.

The above content establishes the foundation for the succeeding discussion on the direct distribution of resource revenues (specifically oil revenue surpluses), as a mechanism to reduce the magnitude of revenues available and subsequently lost to corruption, as well as providing a much-needed economic stimulus. Various pieces of past literature have studied cases of wealth distribution in other countries/states and have also proposed the use of this policy in the case of Iraq. However, few have analyzed this empirically in the case of Iraq. This dissertation will provide an empirical analysis of wealth distribution in Iraq by modeling a citizen-based direct distribution of oil revenues on the Iraqi economy. The results of the model will provide an indication of the potential impacts on producing activities, household incomes and aggregate demand on the economy. Furthermore, the results of the analysis will be used for policy-orientated recommendations on whether direct distribution of oil revenues is a policy worth pursuing for Iraq.

Owing to the above, the principal research questions for this dissertation are as follows:

- How has the presence of significant resource wealth influenced the extent of corruption and patronage networks in Iraq?

- Using a SAM analysis, what are the potential impacts on Output, GDP and Household Incomes when a policy of direct distribution of oil revenues is applied to the Iraqi economy?

- Based on the results of the SAM analysis, is direct distribution of oil revenues a policy worth considering for Iraq?

1.3 STRUCTURE OF THE THESIS

In addition to the above Chapter 1, this dissertation will comprise of a further four chapters as follows:

Chapter 2 will comprise of three parts. Part 1 provides a conceptual framework with respect to the link between natural resources and the extent of corruption. Part 2 provides an overview of the Iraqi oil industry, focusing on governance, and presenting data which demonstrates the importance of oil to the economy. Governance aspects will discuss practices in the pre-and-post Saddam Hussain regime, focusing primarily on governance structures, the role of the Iraqi Oil Company (IOC) and agreements with the semi-autonomous Kurdistan region. Part 3 provides evidence related to the practices of corruption in Iraq in both the pre-and post Saddam Hussain regime. It will build up to the discussion of direct distribution by drawing a link between corruption and patronage networks, and the access to substantial oil revenues.

Chapter 3 will focus primarily on the notion of direct distribution of oil revenues. It will look briefly at some of the existing work in this area, specifically those in the context of Iraq. The chapter will briefly define and discuss the variations in resource wealth management models for countries. The chapter then presents a theoretical model for direct distribution, within the context of allocative efficiency and as a politically rational choice. It will discuss case studies of Alaska and Mongolia, both of which have implemented policies of direct distribution in the past. The experiences from Alaska and Mongolia also present cases of both success and failure with direct distribution.

Chapter 4 will begin by discussing the narrative of distribution within the context of Iraq. It will then discuss the methodological approach for the study. It will outline the research methodology and explain the origins of the data to be used for the analysis. It will also discuss a range of assumptions which will be applied to the model in the empirical analysis. The chapter will then proceed with a presentation of the models simulated results and an interpretation thereof. The chapter will close with a presentation of the model limitations and how these may influence the results.

Chapter 5 summarizes the findings of the analysis, with a specific focus on the feasibility of direct distribution in Iraq. The chapter will close with recommendations for future research.

CHAPTER 2

Oil wealth has been an omnipresent feature of the Iraqi economy throughout history. Under the various regimes, oil wealth has played a pivotal role in shaping Iraq's development. At the same time, substantial oil wealth has also given rise to corruption and patronage networks, as important mechanisms for ruling elites to consolidate power. Studying the link between resource wealth and corruption provides valuable insights to the behavior of ruling governments in Iraq. The first part of this chapter will look conceptually at the nexus between corruption and natural resource wealth. The second part of this chapter will look briefly at Iraqi oil governance between 1916 & 2016. It will highlight the specifics regarding the awarding of the different concessionary contracts and the terms thereof. It will study data relating to production and rents of the oil industry, as well as how oil governance structures have changed since the advent of democracy. The last part of this chapter will discuss patronage networks and corruption in Iraq. It will focus on the mechanisms of patronage and corruption during the Saddam Hussein regime, and how they compare to those practiced since the advent of democracy.

2.1 CONCEPTUAL FRAMEWORK: CORRUPTION & NATURAL RESOURCES

Corruption, to varying degrees and forms occurs in almost every single country in the world. Historical trends suggest a prevalence and greater intensity of corruption in countries under certain conditions. One of the most significant of these conditions is the presence of an abundance of natural resource wealth. Various pieces of literature discuss the links between corruption and resource wealth, with a general consensus that when the possession of natural resources provides governments with substantial revenues, political elites are more likely to abuse their access to these revenues by engaging in corrupt practices, which in-turn undermine the authority of public institutions, specifically those which promote accountability and transparency (Liete & Weidmann 1999 and Collier & Venables 2010). Corruption is one of the major reasons resource-rich economies perform poorly. The dominant forms of corruption in resource rich countries are rent-seeking and patronage networks. Resource rents encourage rent-seeking as individuals compete for a share of these rents, while resource revenues also induce patronage funding as ruling elites seeking to consolidate power by enticing supporters through various incentives, most notably financial. These practices ultimately result in reduced accountability and inefficient allocation of state funds (Kolstad & Søreide, 2009).

2.1.1 RENT SEEKING

In the case of natural resources, rent-seeking refers broadly to the appropriation of resource rents without reciprocating any benefits to society through wealth creation or distribution. The concept of rent refers to the price difference at which an output from a resource can be sold and its respective extraction and production costs, including normal return (De Soysa & Neumayer, 2007). At a governmental level, the concept of rent-seeking is particularly evident within rentier states. A rentier state refers to a state which derives all or a significant portion of

its national revenues from the rents of sovereign natural resources (Beblawi & Luciani, 2016). When governments derive a substantial portion of revenues from natural resources, there is less incentive to raise revenues through conventional means such as taxation, but in turn also less incentive for citizens to monitor the activities of government and public officials. Karl (1997) and Leite & Weidmann (1999) find that the existence of large resource revenues nurtures economic incentives as well as opportunities for corrupt behaviour by government officials, specifically when accountability and transparency mechanisms are weak. The absence of these mechanisms therefore acts as an enabler through which resource rents contribute to corruption (Zhan, 2011).

Consequently, the appropriation of revenues through rent-seeking becomes a means for political elites to exert influence and consolidate political power, at the expense of investments in growth and developmentally advancing elements. Ross (2001) finds that ruling elites are also likely to invest heavily in security apparatus, for the purposes of consolidating power by punishing dissidents and forcibly preventing the formation of social groups independent to the state. Karl (1997) presents evidence of this in the case of Venezuela, where the nationalization of the oil industry resulted in the shifting of resource rents to the state, and in-turn fostered a rent-seeking culture and patron-client system of governance. Indeed, there are other examples of this experience, including in the case of Iraq, which will be studied more closely in the dissertation.

The influence of substantial resource wealth in an economy also gives rise to efficiency losses resulting from the unproductive use of resources in the quest for rents. Hillman & Van Long (2017) suggests that corruption generates massive rents and entices individuals to participate in rent seeking activities through employment in unproductive public offices, from which rents can then be extracted. Mehlum et al. (2006) finds that in cases where resource rents are high and institutional quality is low, skilled agents and entrepreneurs are enticed by enhanced payoffs and would choose to be rent-seekers as opposed to productively employing their skills in other areas of the economy. This phenomenon mimics the concept of Brain Drain, however in this case of Iraq, it is not the migration of skilled workers to other regions, but rather to one sector (hydrocarbons). There are extensions to this which suggest that losses to national income can occur when the losses in production resulting from entrepreneurs departing this sector, exceeds the increase in income that natural resource rents generate (Kolstad & Søreide, 2009). Therefore, rent-seeking not only creates market distortions, it also reduces the size of the economy.

2.1.2 PATRONAGE NETWORKS

When ruling governments seek to consolidate political power, their support mechanisms play a critical role. In this instance, support mechanisms refer to special groups and networks of individuals who are loyal to the ruling party and who also tend to have hold considerable influence in economic, social and political spheres. More precisely these refer to wealthy business owners, ethnic, religious or community leaders and well-versed political representatives. These special groups are commonly referred to as patronage networks. There is a demonstrable link between the appropriation of resource rents and patronage networks in that significant natural resource rents

provide political elites with the means to consolidate political power by attracting supporters with certain incentives (Kolstad & Søreide, 2009). This view is shared by Keller (2014) who suggests that the importance of patronage networks is such that ruling parties seeking to consolidate power are more likely to succeed with well-established patronage networks. Weak patronage networks are likely to be vulnerable to infiltration by opposing political groups.

Nurturing patronage networks is diverse in practice and can be reached through both legal and illegal means. From this perspective, the concepts of clientelism and nepotism can be looked at more closely. Clientelism refers broadly to the exchange of goods & services for political support, often between political actors and patronage networks, and is practiced both legally and illegally. In the current context, nepotism refers to the employment in public offices of individuals based on ethnic, religious or kin ties. With respect to clientelism, the illegal means are simple whereby political actors transfer appropriated resource rents directly to patronage networks. The legal means are more complex and diverse in their practice. For example, patrons who are business owners can be awarded huge government contracts, for which they are unlikely to be held accountable for if they do not deliver on the requirements. Also, patrons who are influential community leaders can be offered preferential services by state in exchange for ensuring that their respective communities remain loyal to the ruling regime. Nepotistic practices on the other hand are concerned primarily with allocating high paying, unproductive jobs, often to unqualified patrons or loyalists, in exchange for continued support to the ruling elites.

Much like the case of rent-seeking, patronage networks also give rise to efficiency losses in the market. Inefficiencies in the allocation of public resources emerge when state funds are appropriated by political elites to fund patronage networks, when they could be spent in more productive ways such as investments into economic diversification, infrastructural needs and human capital development (Mahdy, 2016). The development of human capital is a particularly interesting dynamic when considering the concept of Brain Drain. Skilled workers who choose to be productive in non-resource sectors but recognize that there is little to no public investment in these sectors are likely to pursue opportunities abroad (if they do exist). Similarly, in the example of nepotistic practices when allocating positions in public offices, the state not only experiences real term losses from funds which are allocated to unproductive employment, but also the opportunity costs of a lost productive job which could have been allocated to an individual on merits, and in-turn contributed positively to the state.

2.2 IRAQI OIL GOVERNANCE (1916 – 2003)

2.2.1 FOREIGN OIL COMPANIES AND EARLY CONCESSIONARY CONTRACTS (1925 – 1958)

Under monarchial rule, the production of Iraq's oil was primarily operated by the Iraqi Petroleum Company (IPC). The IPC was a majority British-owned energy company who were in existence between 1929 and 1972 (Wahab, 2015). The IPC had evolved from the originally formed Turkish Petroleum Company (TPC), which was a conglomerate of German, Dutch, British and Turkish interests. The TPC was formed in 1914, and in 1925 was the recipient of the first concessionary oil contract in Iraq, with a 75-year duration. A revision of the original agreement was made in 1931, which increased the area of coverage from 190 square miles to 35 000 square miles, effectively giving the IPC the right to explore all lands east of the Tigris River (Yacoub, 2015). In 1932, the Iraqi government awarded a secondary concessionary contract for oil exploration, this time to the British Oil Development Company (BODC), also with a 75-year duration. The move was largely viewed as an attempt to increase production and revenues by creating competition among the foreign firms. Under the terms of the second concessionary agreement, the BDOC were effectively given the right to explore all areas west of the Tigris River, approximately 46 000 square miles.

The presence of the BDOC had understandably unsettled the IPC, and after consultation with the various stakeholders, the BDOC concession was transferred to the IPC in 1937 and later to the Mosul Petroleum Company (MPC), a subsidiary of the IPC. Subsidiaries of the IPC began to take a more central role in the Iraqi oil industry, particularly after 1937. In 1938, the Basrah Oil Company (BOC) was given a 75-year concessionary contract for all remaining areas not covered under the terms of any previously awarded concession. This area spanned approximately 93 000 square miles and though there was little activity in the early stages, the Basrah oilfields began producing and exporting in 1951 (Yacoub, 2015). Despite changes to revenue sharing in 1952, the absence of any operational oversight from the government in Iraq's oil industry meant that they were not made privy to any information or figures relating to production, or rents which would accrue to the IPC. As a result, the Iraqi government and population alike had very little knowledge of the true potential of their countries natural resource wealth. The privacy of the IPC operations between 1925 & 1952 also partly explains why there are almost no reliable records of IPC profits before 1952, whilst production figures are available from 1934 onwards.

Table 1 (below) provides a matrix of the terms of each concessionary contract per year in which they were agreed. The information asymmetries present in Iraq's oil industry contributed significantly to the relatively low allocation of income to the government, both in absolute terms as well as percentage share of total net profit. The level of income earned by the government was also due to the level of production. Under the terms of the concessionary contracts, the government imposed no obligation on maintaining a specified level of production, or to increase production when more income was required. Since the IPC had deliberately maintained a low production level, government revenues were very low. Even after the increase in royalty payments from 4 to 6 shillings (gold) in 1950, government revenues were still a fraction of the foreign companies' profits (Yacoub, 2015). Despite the 1952 profit

TABLE 1: TERMS ON CONCESSIONARY CONTRACTS

Agreement Year	Companies Involved	Concession Area	Concession Duration	Dead Rent*	Royalty	Taxation
1925	TPC	All areas except the transferred territories and *Basrah* (190 mi^2)	75 years	-	4 shillings (gold) per metric ton	-
1931	IPC	Revised (all lands east of *Tigris River*) 35,000 mi^2	-	£200 000 (gold)	Same	Exempt - £9,000 (gold) until exports began then increase as agreed
1932	BODC, later taken over by IPC in 1938	All areas west of *Tigris River* and north of 33rd parallel (around 46,000 mi^2)	75 years	£100 000, rising to £200 000 and 20% of oil for government	Same	Exempt - £1000 until production began then identical to IPC
1938	BPC-subsidiary of IPC	All remaining areas (93, 000 mi^2).	-	£200 000 (gold) annually until export	Same	-
1950	IPC	All	-	-	6 shillings (gold)	-
1952	IPC	All	-	-	50% of profits, 12.5% royalties included in the 50% profit	-

Source: Extract from Yacoub (2015), Longrigo (1961), Issawi & Yeganeh (1961), Mikadashi (1966), Shwadran (1973).

** Dead rent refers to the payment of fixed rent without consideration of profitability*

sharing agreement increasing the government's revenues substantially, the IPC's share of total net profits remained higher. Only after the 1958 revolution did government revenues begin to exceed IPC profits.

Apart from the terms of Iraq's concessionary contracts being favorable towards foreign oil companies, their high profitability was also due to lower production costs, higher productivity of the Iraqi oil fields and that on average, prices remained consistent with the price of crude oil in the Gulf of Mexico, which at the time was deemed to be high (Issawi and Yeganeh, 1962). Even after increasing royalties, the Iraqi government was still unable to capture the excess rents. Further oversight in the terms of concessionary contracts meant that foreign oil companies also paid no taxes on profits. Taxes were solely dependent on exports and production. Since production was deliberately kept relatively low, taxes payable was fairly minimal (Yacoub, 2015).

The terms of the concessionary contracts, which were largely unfavorable to the Iraqi government may not necessarily have been a result of oversight or omission during the negotiations. There are many reasons why concessionary contracts may have been intentionally advantageous towards to the British-owned oil companies. Given the politics of the time, Iraq was effectively under British control. Ergo rewarding of oil exploration contracts to British-owned firms would not have been unexpected. Even in a case where Iraq had already been independent,

TABLE 2: IPC'S OIL PRODUCTION, PAYMENTS TO THE GOVERNMENT & NET PROFITS (1925-1964)

Year	Long Tons*	IPC Payment to Government** £000	Company Net Profits £000	Ratio of Company Net Profits to Government Payment
1925	-	0.35	-	-
1926	-	1	-	-
1927	-	1	-	-
1928	-	1	-	-
1929	-	1	-	-
1930	-	1	-	-
1931	-	401	-	-
1932	-	579	-	-
1933	-	742	-	-
1934	962,609	1,484	-	-
1935	3,581,953	1,009	-	-
1936	3,914,213	1,049	-	-
1937	4,137,824	1,251	-	
1938	4,162,939	1,896	-	-
1949	3,781,958	3,126	-	-
1950	6,160,765	6,781	-	-
1951	8,117,744	15,161	-	-
1952	18,060,803	40,740	44,448	1.091
1953	27,220,199	51,449	57,224	1.112
1954	29,615,569	68,517	74,496	1.087
1955	32,716,227	73,824	79,239	1.073
1956	30,606,282	69,165	74,239	1.073
1957	21,361,979	51,523	54,182	1.051
1958	34,931,461	84,604	61,809	0.730

Source: Mikdashi, 1966

** 1 long ton = 1.0161 metric ton*

*** Payments by the IPC group are inclusive of inspection fees, tax commutation payments and scholarships awarded to Iraqi students.*

foreign firms would still have had some measure of involvement in Iraq's oil exploration, be it operationally or just in an advisory role. This is primarily due to Iraq not having the experience or expertise to operate the oil industry.

2.2.2 POST-INDEPENDENCE POLICY, BA'ATH PARTY LEADERSHIP & OIL INDUSTRY NATIONALISATION (1958 - 1979)

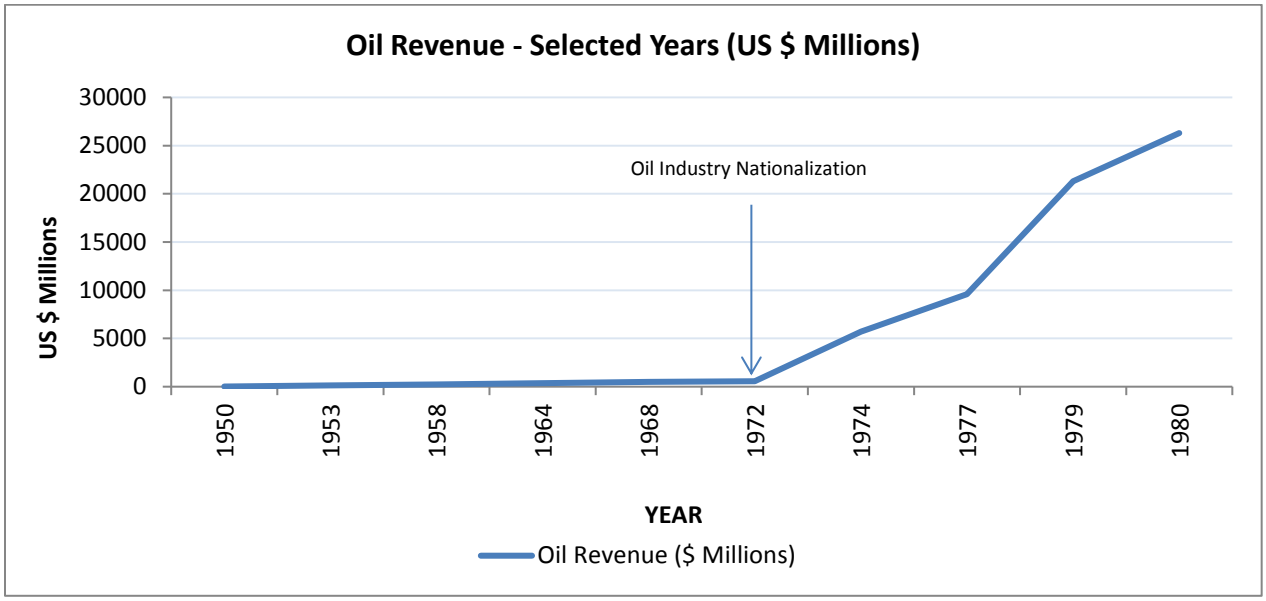
The coming of the 1958 revolution saw the birth of the Iraqi Republic, led by General Abdu Al Karim Qassim. The period between 1958 & 1963 were largely dedicated to reviewing the concessionary contracts with the IPC's, as well as negotiations regarding independence and administrative autonomy over areas populated by ethnic Kurds. However, General Qassim became increasingly undesirable as a leader and was ultimately assassinated in 1963. Politics between 1963 & 1968 was primarily dedicated to easing tensions with the Kurdish region. Little progress was however made, leading to the 1968 military coup and marking the beginning of the Ba'ath party leadership. Like the approach of their predecessors, in the early days of their leadership the Ba'ath party prioritized easing tension with the Kurdish region. President Ahmad Hassan Al Baker granted autonomy to the Kurdistan area, as well as a host of

other terms which included the recognition of Kurdish as an official Iraqi language, Kurdish political representation in the senior cabinet and the commitment to economic development of Kurdish areas, to name a few (Ghareeb, 1981). An interesting observation, was the agreement allowing the Kirkuk locality to remain under control of the government for the time being, pending further negotiation. The settlement with the Kurdish region meant that the Ba'ath party could now focus on the definitive policy of their leadership: the nationalization of the Iraqi oil industry.

The foundation for nationalization of the oil industry had already been laid with the establishment of the state-owned Iraq National Oil Company (INOC) in 1964, prior to the Ba'ath party leadership. The government believed that to ensure that rents accrued to the government and not the foreign companies, the concessionary areas seized from the IPC required to be developed by a state-owned company (Yacoub, 2015). Governance of the INOC was fairly complex. Operations were overseen by a board of directors, all of whom were nonpartisan to the finance and administration. However, these appointments were all executed by presidential decree, with all decisions also requiring ministerial approval. It is important to note that at this point, the industry had not been completely nationalized. The IPC continued to operate their oilfields and were still bound by service agreements. The key aspect of the INOC operations was that for the first time, the Iraqi government had a strong measure of operational oversight of the country's oil industry. This was significant in that it placed production levels at the discretion of the state. Furthermore, the government could also now accurately determine the volume of Iraq's oil reserves. Negotiations between the government and IPC continued, primarily regarding the reluctance of the IPC to expand production in its oilfields. In 1972, sighting no end to disputes with the IPC, the government took the decision to nationalize all of Iraq's oil operations.

The official nationalization of Iraq's oil industry took place in 1974, after negotiating compensation with the IPC. Under the new law, the INOC was granted the exclusive rights to explore, develop and produce oil throughout Iraq. Through the INOC operations, Iraq drastically increased its exploratory efforts, which led to the finding of two massive oil fields, namely Majnoon and West Qurna (Stork, 1975). Predictably, post-nationalization saw the share of the oil industry in the economy (as a % of GDP) increase from 35% in 1970 to 60% in in 1974. Similarly, government revenues derived from the oil industry also rose from 52% in 1971 to 87% in 1976, while crude oil accounted for 98% of total exports in 1975 (Stork, 1975). Figure 1 (which follows) illustrates the sharp rise in oil revenues for selected periods between 1950 & 1980. Between 1972 & 1980, oil revenues in Iraq rose by more than US $25 billion. The sharp rise in revenues was a product of both a significant increase in production as well as the soaring price of crude, largely influenced by the Arab-Israeli war at the time. In addition to the transformation of the oil industry, there were many social and industrial reforms. Industrial reforms saw huge investments into iron, steel and petrochemicals industries (Cleveland, 2004). Other reforms included a reduction in taxes, the provision of subsidies for basic food items, the establishment of free health care and free Investments into Iraq's economy, which also meant the creation of much-needed employment opportunities.

FIGURE 1: IRAQ OIL REVENUE FOR SELECTED YEARS BETWEEN 1950 & 1980



Sources: Nyrop (1979), EIU (1980) & Cleveland (1981)

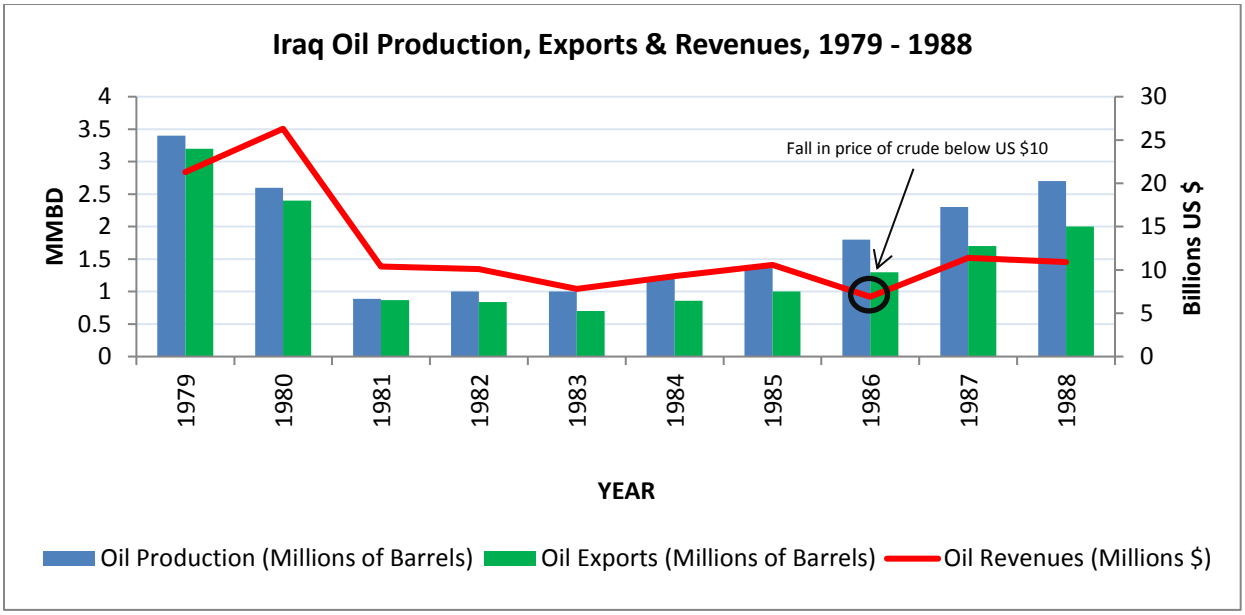
These policies all contributed significantly to improvements in welfare levels for the population. Just as importantly for the government though, these reforms placed confidence in the ruling Ba'ath party and nullified support for any opposition.

2.2.3 THE SADDAM HUSSAIN REGIME (1979 – 2003)

Saddam Hussain officially became Iraqi president in 1979, having previously served as vice-president in the early days of the Ba'ath party leadership. Like many resource-rich countries governed by authoritarian regimes, Saddam Hussein utilized Iraq's substantial oil revenues to fund networks of patronage and coerce any opposition or non-proponents of the regime into submission, primarily through well-established security structures. It was a sophisticated system which was designed to consolidate power and co-opt support by punishing any dissidents and rewarding loyalty to the regime. His coming to power coincided with that of Iran's Ayatollah Khomeini, who fueled tension between Iran and the Iraqi government due to his unwavering support for Kurdish independence. More importantly though were the tensions born out of the religious divide between the Shia-led Iranian government and Sunni-led Iraqi government. This was however not the first occurrence of religious divides creating diplomatic tension between the two nations but was certainly the most profound. It epitomized the extent to which religious orientation influenced political agents in the Middle-East. The continued tension culminated with the coming of the Iran-Iraq war, lasting eight years between 1980 & 1988 and resulting in great economic and human losses for Iraq (Yacoub, 2015). The economic losses were primarily as a result of destruction to Iraq's oil infrastructure. After 1980, oil production fell by more than 1.71 MMBD, A loss of more than US $15 billion in revenue (see Figure 2 which

follows). 1980 was arguably the most destructive period of the war. Although the war had officially lasted for 8 years, after 1982 the conflict became less militarily dominated and more about finding a diplomatic solution. This was primarily attributed to the involvement of the United Nations. With the conflict now being less destructive, Iraq could restore the damaged its infrastructure and begin to expand production.

FIGURE 2: IRAQ OIL PRODUCTION, EXPORTS & REVENUES, 1979 - 1988



Sources: Cedano (2008)

** Oil production & exports illustrated on primary axis, Oil revenues on secondary axis*

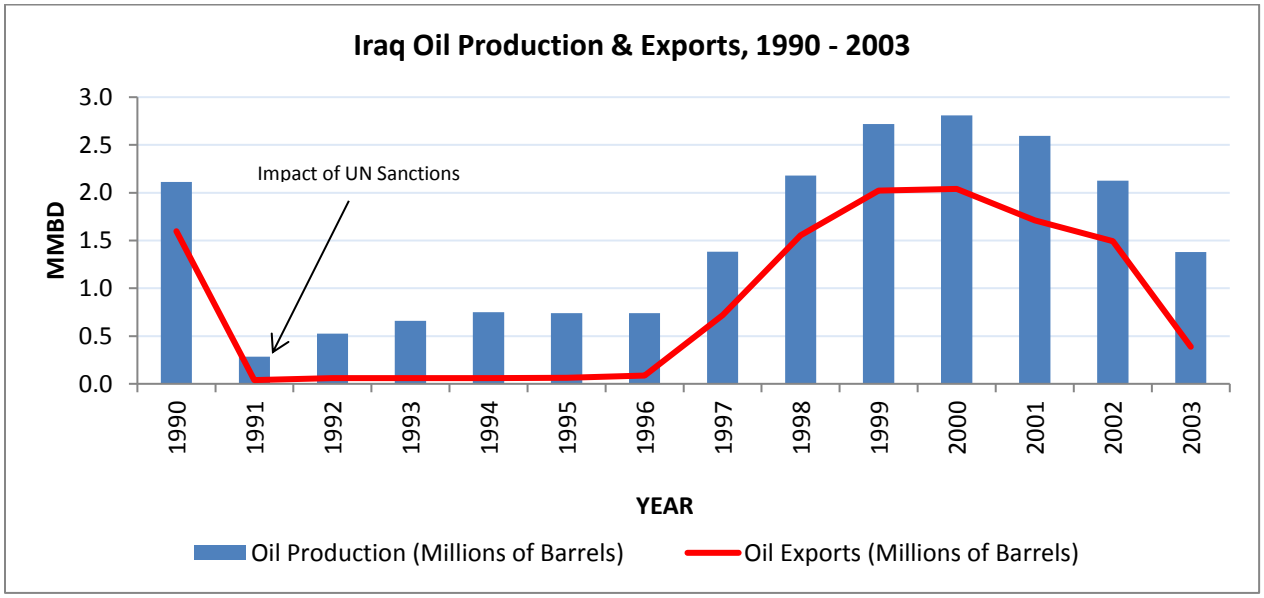
** MMBD = Million Barrels Per Day*

The end of the Iran-Iraq war was however not the end of Saddam Hussain's onslaught in the region. In 1990, Iraq invaded Kuwait and declared its annexation. On this occasion, the conflict was specifically fueled by Kuwait producing oil above the OPEC treaty limit, and as a result adversely affecting (reducing) the global crude price as well as Iraq's share of global oil exports (and subsequently revenue). In addition to this, Kuwait were accused of allegedly side-drilling under Iraqi soil to extract oil from the super-giant Rumaila oil field, located in southern Iraq (Basrah), approximately 20 miles from the Iraq-Kuwait border. The Gulf War conflict with Kuwait was more intense than that with Iran. Not only was some of Iraq's oil infrastructure again damaged but also power supply systems, certain modes of the transport system, water and sewage networks were all destroyed.

As punishment for the invasion of Kuwait, in 1990 the UN Security Council imposed widespread financial and trade sanctions on Iraq, most notably the banning of Iraqi oil exports (Wahab, 2015). Oil production dropped by more than 1.8MMBD after the sanctions were imposed (see Figure 3), resulting in huge revenue losses for Iraq. The Security

Council had made for provision to avert any humanitarian crisis by allowing Iraq, under the Oil-to-Food program to export US $1.6 billion in oil bi-annually to obtain humanitarian supplies. Between 1996 & 1999, this amount had grown from US $2 billion to US $8.3 billion (Sanford, 2003). The income from these exports were primarily used for food subsidies to be distributed to the Iraqi population. It is important to note that despite the sanctions, Saddam Hussain was still able to develop an intricate oil smuggling network which earned the regime additional funds and ultimately contributed to the consolidation of power (Wahab, 2015). This will be looked at more closely in the sections which

FIGURE 3: IRAQ OIL PRODUCTION & EXPORTS, 1990 - 2003



Sources: Cedano (2008), OPEC Annual Statistical Bulletin 2004

follow. After the conflict with Kuwait, much of the focus in Iraq was on negotiating an end to the sanctioned export quotas as well as renewed calls for greater Kurdish autonomy and control of the Kirkuk locality. On the 20th of March 2003, the U.S and British invasion of Iraq effectively ended the reign of Saddam Hussain and the Ba'ath party.

2.3 IRAQI OIL GOVERNANCE AFTER 2003

Until today, Iraq in the post-Saddam Hussain era has been characterized by political fragmentation, ethno-sectarian violence and chronic instability. Political competition has adopted the conventional form of parties and elections, but also violent forms of sectarian conflict and insurrection (Wahab, 2015). Corruption and patronage networks are an ever-present feature but have evolved to become less centralized and more competitive. Despite a complete overhaul of the political system, governance and accountability remain weak. Furthermore, competition over access to oil revenues, coupled with political and administrative fragmentation has resulted in an undesirable propagation for corrupt practices and criminality (Wahab, 2015). Iraqi oil governance had been reasonably complex as well, with

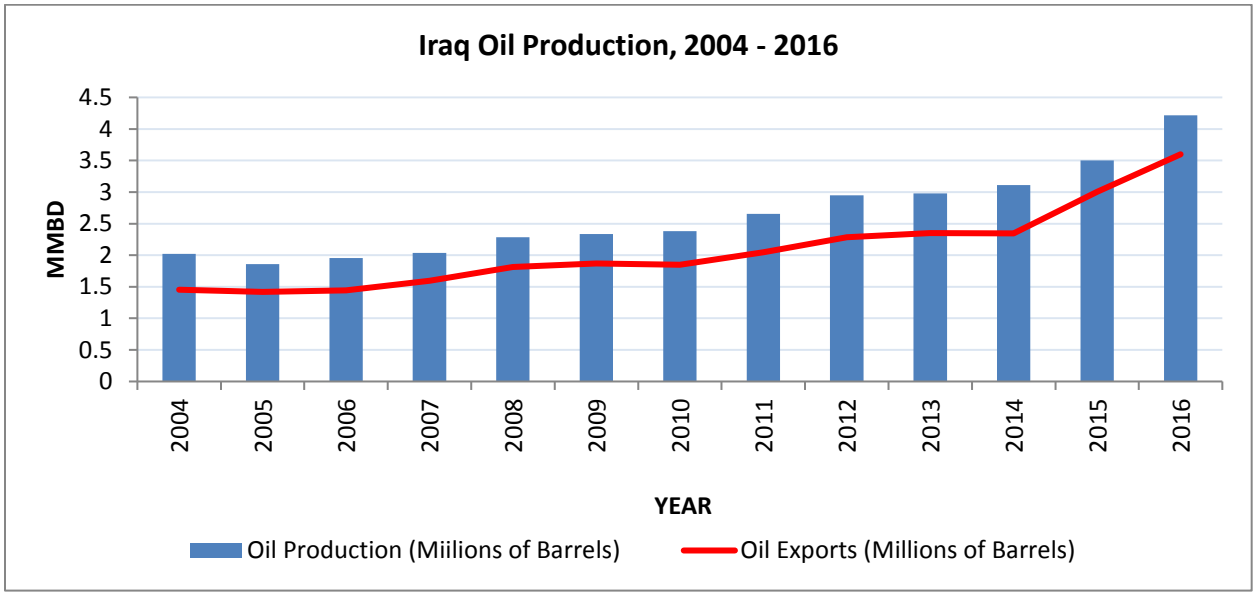
a combination of transitional management authorities, the return of international oil companies and the regional sharing of oil revenues. Immediately after the fall of the regime, management and governance of Iraqi oil operations were placed exclusively under the control of the Coalition Provisional Authority (CPA). The CPA comprised representatives from the US State Department, as well industry experts from US oil companies (Rutledge, 2005). Also included was a selection of exiled former high-ranking members of Iraqi Oil Ministry, and the leader of Iraq's main opposition group at the time. It was intended than when the U.S left Iraq, the Iraqi representation on the CPA would facilitate a smooth transition of control of the oil industry to the first democratically elected government.

Under guidance from the CPA, it was concluded that International Oil Companies (IOC) would again become active in Iraq's oil operations, under the terms of a Production Sharing Contract (PSC). Under the terms of the PSC, the state would maintain ownership of the oil industry, while the IOC's would act as service providers, receiving pre-determined shares of production in return for services rendered. This period also witnessed the drafting of the TAL (Law of Administration for the State of Iraq or Transitional Administrative Law), which was to later form the basis of the permanent constitution, albeit an ambiguous and controversial one. Under the terms of the TAL, the Kurdish Regional Government (KRG) was given full administration rights over Kurdish areas, which included the long-disputed Kirkuk locality. This meant that the Kurds would manage oil operations in the areas they controlled and be at liability to sign their own PSC agreements with IOC's. There are suggestions that this was likely an unofficial reward to the KRG after they gave full military and logistical support to the U.S and British forces during the invasions (Yacoub, 2015).

The drafting of Iraq's new oil and gas law has been a key source of debate among policy makers, specifically with respect to the operation and management of the oil industry. An INOC would most likely use production-sharing contracts with IOC's, which were unfavorable due to their notorious exploitation of the Iraqi oil sector in the past (Yacoub, 2015). On the other hand, regional control of oil operations (and subsequent revenue) would create a measure of inequality between regions with vast oil producing capacity and those without, potentially leading to large internal migration to areas which generate the most revenue, under the assumption of a better provision of services and economic prosperity. Ultimately it would be settled that the distribution and sharing of revenue shall be determined annually through the country's State Budget Law (SBL) and thus subject to annual adjustments and approval by the parliament. Furthermore, oil revenues are not distributed remotely but are combined with other revenues in the budget. No other statutory system for oil revenue sharing exists, however the KRG collects payments from the PSC's it enters into with IOC's (Aresti, 2016).

Oil production in Iraq has grown steadily since 2004 from just over 2MMBD to 4,2MMBD by 2016 (see Figure 4 below), effectively more than doubling of its average daily output. The sharp rise in production can be attributed to a host of factors, most notably the easing of UN trade sanctions and the restoration of damaged oil infrastructure. Production continued to grow even after the 2014 ISIS insurrection, this even though ISIS had temporarily captured

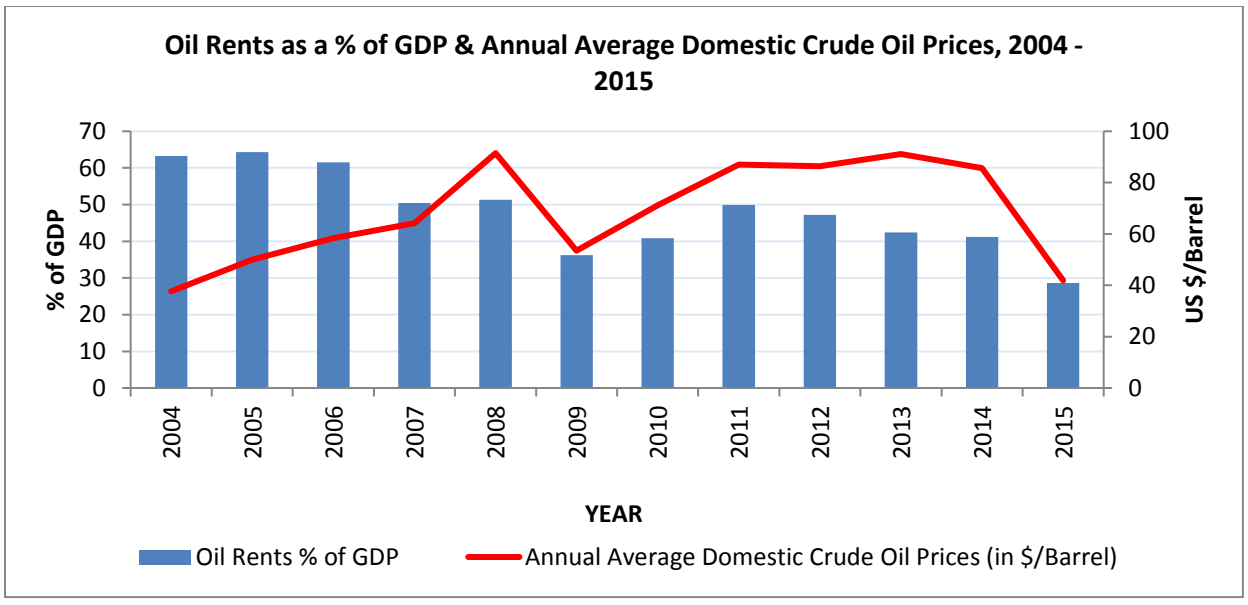
FIGURE 4: IRAQ OIL PRODUCTION & EXPORTS, 2004 - 2016



Sources: International Monetary Fund, OPEC Annual Statistical Bulletin 2016

oilfields in Iraq and profited from them by means of oil smuggling and black-market trading (Wahab, 2015). There was a noticeable rise in production (& exports) between 2014 & 2016. The average production growth between 2004 & 2014 was 4.57%; while production growth between from 2014 –2015 & 2015-2016 was 12.41% and 20.57%

FIGURE 5: IRAQ OIL RENTS AS % OF GDP & ANNUAL AVERAGE DOMESTIC CRUDE OIL PRICES



Sources: World Bank & Energy Information Agency

respectively. This was a deliberate move on the part of Iraq and was justified on the grounds of the government needing to raise funds to initiate the offensive against ISIS. In December 2016, OPEC announced an agreement to collectively cut global oil production by 1,2MMBD, due to of the global over-supply and resulting decline in the crude oil price (*The Economist*, 2016). Iraq had committed to the agreement but has largely failed to comply with its provisions, citing the need for funds to continue the offensive against ISIS.

In addition to the over-supply, factors such as the firming of the US Dollar, slower than expected demand growth and the Iranian nuclear deal had all contributed to the decline in the global oil price. For Iraq, the declining oil price had consequently resulted in a decline in oil rents as a percentage of GDP from 41.2% in 2014 to 28.6% in 2015 (see Figure 5 above). The drop in the oil price could likely also explain Iraq's sharp increase in its production level after 2014. While OPEC has thus far been lenient with respect to Iraq violating the agreement on OPEC member production cuts, it is likely to increase pressure as it continues to push for a recovery in the price of crude oil. However, there is optimism over a medium-to-long-run recovery, particularly if both OPEC and non-OPEC producers can agree to cut production and more importantly, stringently comply with these cuts (Melton, 2017).

2.4 PATRONAGE NETWORKS AND CORRUPTION IN IRAQ UNDER THE BA'ATH REGIME

If Iraq were to be characterized by two elements, one would be its vast oil wealth; the other would be the high levels of corruption. Corruption has been an omnipresent feature in Iraq, both pre-and-post the Saddam Hussain & Ba'ath party era. As a consequence of their diversity, corrupt practices are extremely difficult, if not impossible to measure (USIP, 2010). Corruption in Iraq has in many ways been a product of the patrimonial practices and neo-patrimonial governance models that have been practiced since the inception of the modern Iraqi state, as a mechanism to consolidate power (Mahdy, 2016). Politics in Iraq has evolved and become more concerned with political survival and significantly less about effective leadership and good governance. Under the Saddam Hussain regime and the leadership that has followed, governance relied primarily on patronage networks as a mechanism to co-opt and maintain loyalty and support, all of which have contributed significantly to the high level of corruption in the country.

2.4.1 RESOURCE EXPLOITATION FOR REGIME CONSOLIDATION

Nationalizing the oil industry undoubtedly served in the best interests of Iraq, however it also facilitated monopolistic access to large oil revenues for the regime. This served as a powerful tool for the consolidation of power by co-opting society through various public goods and social services, as well as coercing opposition into submission by means of a well-supplied security apparatus (Wahab, 2015). The policies of the regime during its infancy followed the trend of most newly-established autocratic governments i.e. a very socialistic approach, almost exclusively intended to win the hearts and minds of the population. It was an easier task considering the relative neglect of the population under previous governments. It is important to note that by being less transparent, oil revenue-funded governments can sustain public popularity by boasting about expenditures. As a consequence of the lack of transparency, the

public are never privy to information relating to the spending-to-revenue ratio and remain under the guise that the government are allocating all funds efficiently (Ross, 2012). The nature of these policies was evident by the subsidizing of several goods and services in the economy, such as food, fuel and healthcare. In addition, the public sector also offered lucrative employment opportunities which attracted top college graduates in the country.

Measures on transparency and the quality of governance under the Ba'ath regime are understandably scarce. General perceptions of corruption were low during the Ba'ath regimes infancy, largely attributed to the government's consistent involvement in construction and infrastructure projects that provided employment and increased living standards (Al-Ali, 2014). This is not to say that corruption itself was low, rather it was more delicate, protected by networks of patronage and often affected through state institutions, at least up until the imposition of sanctions. An example of this was the formation of a parasite-like semiprivate sector, comprising primarily of contractors, entrepreneurs, and other intermediaries. This conglomerate benefited largely from government revenue by acquiring exclusive access to economic opportunities, particularly high-value government contracts. Unsurprisingly, many of these individuals had family ties or hailed from the same tribal ancestry as leading Ba'athist figures or other state officials (Marr, 2003). This was in line with the common theme of religious, ethnic and tribal principles under which the Ba'ath party structured itself and its networks of patronage.

Measures of transparency and the quality of governance under the Ba'ath regime became available late in the 1990's. Between 1996 & 2003, Worldwide Governance Indicators show consistent poor performance across all six

TABLE 3: IRAQ WORLDWIDE GOVERNANCE INDICATORS FOR SELECTED YEARS BETWEEN 1996 & 2003

Year	Voice & Accountability	Political Stability & Absence of Violence Terrorism	Government Effectiveness	Regulatory Quality	Rule of Law	Control of Corruption
1996	-1.957	-1.850	-1.947	-2.022	-1.512	-1.534
1998	-1.923	-1.594	-1.865	-2.165	-1.485	-1.250
2000	-1.993	-1.771	-1.865	-2.153	-1.330	-1.470
2002	-2.040	-1.648	-1.876	-1.994	-1.470	-1.295
2003	-1.464	-2.426	-1.660	-1.430	-1.665	-1.217

Source: Kaufmann, Kraay, and Mastruzzi 2010

** The Worldwide Governance Indicators (WGI) is a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. The scale ranges from -2.5 to 2.5, where higher values correspond to better governance outcomes and lower values correspond to poor governance outcomes*

categories of governance. Corruption at a state level intensified and became more flagrant after the imposition of U.N sanctions (Mahdy, 2016). These sanctions had a crippling effect on the Iraqi economy which included hindering

the regimes public expenditures and weakening state's law enforcement and service institutions. They also unintentionally increased civil society's dependence on the regime, particularly after a rationing system had been put in place to manage food shortages. The impact of the sanctions was evident through hyperinflation, currency devaluation and rising unemployment (Alnasrawi 2001). In addition to this, GDP per capita declined to a mere US $343 by 1996, having previously peaked at US $4,219 in 1979 (Sassoon 2012). Outside of the Oil-for-Food Program, the regime developed an intricate and illicit oil smuggling network, which exported large amounts of Iraqi crude oil, with the revenues channeled directly to Saddam Hussain, senior party figures and key regime proponents (Volcker, Goldstone, and Pieth 2005). Given that the sanctions had brought with it the risk of revolt against the regime, Saddam Hussein leveraged the influence and authority of tribal leaders by granting them greater autonomy to generate revenues in return for nullifying any dissidents and advocating continued regime support (Wahab, 2015). These mechanisms ensured that with corruption becoming more apparent, the regime would not need to be concerned about any resistance movements.

2.4.2 REGIME INCENTIVE MECHANISMS: PRACTICES OF CLIENTELISM & NEPOTISM

Access to state resources is a mechanism through which patronage networks are nurtured. The Ba'ath regime developed elaborate networks of patronage which used incentive schemes to reward support and loyalty to Saddam Hussain. These schemes were primarily implemented through practices of clientelism & nepotism. Many Iraqis received medals, certificates and badges from the regime that designated different levels of status and privileges (Wahab, 2015). It is important to note that the recipients of these privileges comprised of both party and non-party members, with the latter mainly including individuals who had great influence over local societies, such as tribal elders and prominent religious leaders. Among the most desirable of these rewards was the "Identity Card of the Friends of Mr. President Leader Saddam Hussein", which entitled holders to privileges such as extra exam grades for the member's children, special access to housing, acceptance of family members into universities and priority services in the government bureaucracy (Wahab, 2015 & Sassoon, 2011; 2012 & 2016).

Acts of nepotism were also widely used in the incentive schemes. The Bertelsmann Foundation (2012) indicates that the public sector often appointed unqualified employees purely based on sectarian, political, tribal and family ties. One of the more interesting experiences though of the Ba'ath regime was that loyalty to Saddam Hussain and the Ba'ath party seemingly took precedence over ethnic or religious allegiances. This was evident when considering that Kurds, Shias, Sunnis, and Christians were all affiliated to the Ba'ath party, held positions in public office and took part its security operations & intelligence apparatuses (Wahab, 2015). It was a unique circumstance given that at the heart of many internal Iraqi conflicts were the ethno-sectarian divides which have in the past, contributed significantly towards political instability. However, it is also illustration that whilst ethnic and religious identities do matter, the power and incentives afforded through patronage networks are of greater value and benefit than ethnic

and religious loyalty. Therefore, creating dependencies through patronage proves to be an effective mechanism for attracting political support in Iraq.

Parallel to the incentive mechanisms for attaining support were the multi-layered security agencies and intelligence apparatus which were employed to ensure the survival of the regime. Within the intelligence apparatus were also intricate networks of informants placed among both supporters and opponents of the regime. These networks ensured that any plots to challenge the regime were undercut, and coupled with the security forces, any resistance or potential uprising would be nullified (Otterman, 2003). These institutions became particularly important to the regime after the effects of the U.N sanctions and wars with Iraq & Kuwait had created resentment by large sections of civil society towards the regime. Furthermore, the financial implications of the sanctions also meant that the regime was not able to maintain the welfare state-like approach under which it had initially gained popularity and public approval (Wahab, 2015). Creating these institutions were very much a product of the lessons learnt from the numerous coups that occurred in Iraq in the 1960s and 1970s (Sassoon 2011). The creation of oppressive security institutions and extensive patronage networks, funded by Iraq's vast oil wealth, illustrated the extent to which the Ba'ath regime, and Saddam Hussain in particular had gone in the pursuit of absolute power and self-enrichment, all at the expense of the Iraqi population.

2.5 IRAQI LEADERSHIP AFTER 2003: A LINGERING LEGACY OF PATRONAGE AND CORRUPTION

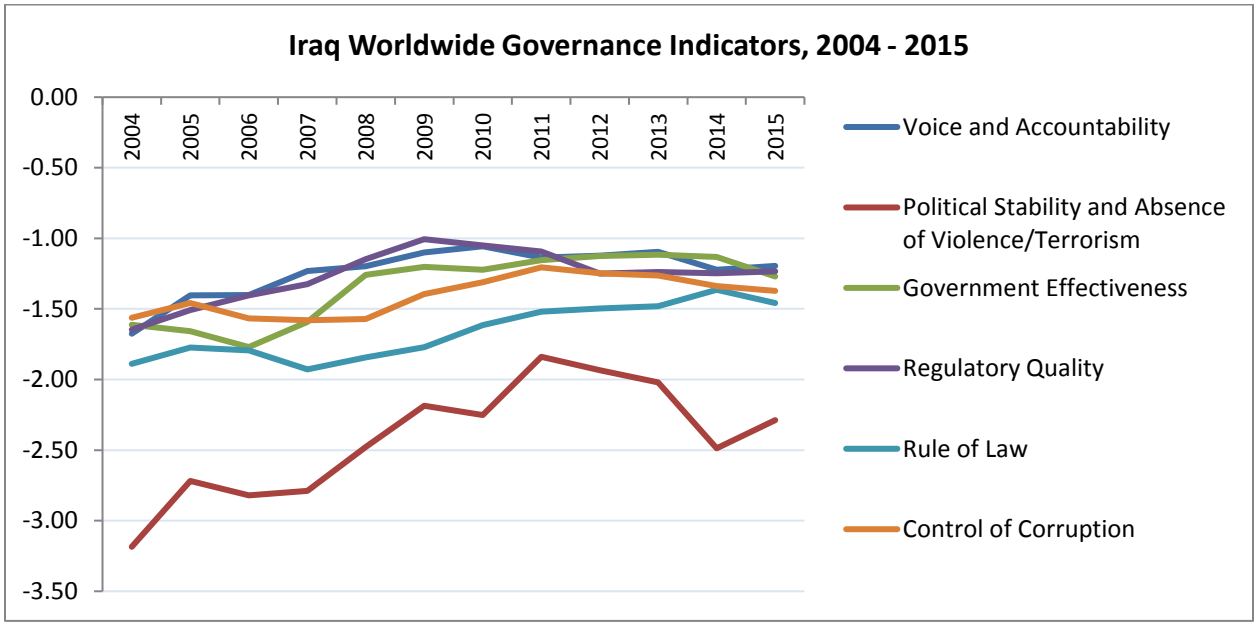
The democratic transition in Iraq has for the better part been chaotic and dysfunctional. It is somewhat understandable considering that newly formed democracies often do not have the same stability as long-standing authoritarian regimes, particularly when there are continuous power struggles. Libya, Egypt and Tunisia post the 2011 Arab Spring are prime examples. For Iraq however, despite being more than 10 years on from the democratic transition, the government is still plagued by high levels of corruption and practices of patronage. The only transformation has been the manner in which these activities are practiced. For example, the structure of patronage has evolved from being affected through a national hierarchical structure to now local decentralized networks (Wahab, 2015). Similarly, corruption has primarily been concerned with the plundering of public resources for self and political party-enrichment. The persistence of these activities within the public sector are widely regarded as a legacy of the Saddam Hussain regime, and without an effective means to curb it is likely to continue to be a feature in the Iraqi economy (Ghanim, 2011).

Not only have corruption and patronage practices been ubiquitous since 2003, they have intensified, become more apparent and increased in the number of actors. The advent of democracy has brought with it an increase in political freedom and representation in Iraq, but at the same time has made corruption competitive as rival political factions compete for access to government offices and wealth, thereby being able to distribute wealth and employment in public offices to co-opt support and marginalize political rivals (Wahab, 2015). Indeed, the practice of patronage as a mechanism to exercise power and influence is a legacy of the Saddam Hussein regime, but more so it undermines

democratic values and economic & social capital development. Corruption is still affected through legal streams such as inefficient employment and unmerited contracting. For example, in 2014 government payrolls were found to include approximately fifty-thousand "ghost employees," even "ghost battalions" of soldiers who either did not exist or do not report to work, however their paychecks were still collected (Cockburn 2014; al-Salhy, 2014). These legal mechanisms of corruption are however comparatively rare in respect of the various illegal mechanisms. Massive embezzlement, procurement scams, money laundering, oil smuggling and widespread bureaucratic bribery are now the dominant forms of corruption in Iraq and have led the country to the bottom of international corruption rankings (Agator, 2013). These elements have characterized politics in Iraq after 2003 and illustrated that political survival has become primarily about maintaining patronage linkages rather than effective state building and service delivery.

Systematic corruption in Iraq is also a product of feeble and inefficient mechanisms to reduce it. Indeed after 2003, several integrity bodies were established and given the mandate to reduce the extent of corruption at a state level. These institutions have thus far been ineffective, largely due to them being (intentionally) under-resourced and politicized, with the prime-minister himself often intervening in on-going corruption investigations to protect cabinet

FIGURE 6: IRAQ WORLDWIDE GOVERNANCE INDICATORS, 2004 - 2015



Source: Kaufmann, Kraay, and Mastruzzi 2010, Updated for 2015

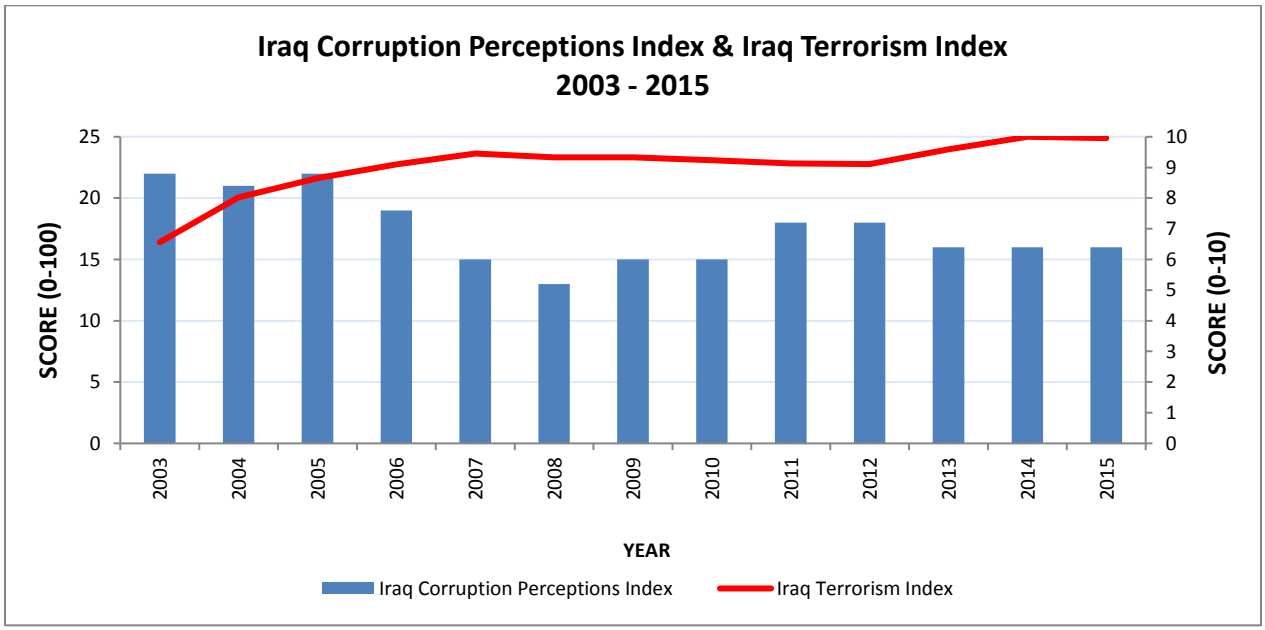
** The estimate for Political Stability and Absence of Violence/Terrorism were greater than -2.5 between 2004 & 2008 due to the impact of the 2003 US invasion & the years of sectarian violence which followed*

ministers and senior officials (Wahab, 2015). This is not the only mechanism through which the leadership have failed to eradicate corruption within its governance structures. Indeed, senior political figures such as former Prime Minister Nouri Al-Maliki, who served between 2006 & 2014, consolidated support by building networks of patronage and purging his political opposition, particularly the Sunni coalition, by enticing their leaders financially with senior

government positions (Wahab, 2015). The analysis of governance indicators suggests that, excluding that of political stability, Iraqi governance has improved since 2003 (See figure 6). However, considering that Iraq is more than 10 years on from the political transition, the performance on these indicators is still very poor.

The prevalence of corruption in Iraq may also be a significant contributor to the enduring political instability, sectarian violence and insurgent activity. Several studies support the notion that corruption does have a strong link to the likelihood of terrorist/extremist/insurgent activity, particularly in developing countries (Atwood, 2003; Chayes, 2016; Shelly, 2004; USIP, 2010; Zumve et al., 2013). Although high levels of corruption are not the only contributing factor towards the destabilization of a country, it can play a significant role in undermining the public confidence in institutions, which can become a driver of conflict. The links between governance, corruption, and conflict are complex and interrelated, and a reality in many countries (USIP, 2010). Figure 7 below provides measures

FIGURE 7: IRAQ CORRUPTION PERCEPTIONS INDEX & IRAQ TERRORISM INDEX 2003 - 2015



Source: Transparency International and Institute for Economics & Peace

** The Corruption Perceptions Index (CPI) ranks countries by their perceived levels of corruption, as determined by expert assessments and opinion surveys. The CPI currently ranks 175 countries on a scale from 100 (very clean) to 0 (highly corrupt).*

** The Global Terrorism Index (GTI) is based on data from the Global Terrorism Database (GTD) and is a comprehensive measure of the direct and indirect impact of terrorism in 163 countries in terms of lives lost, injuries, property damage and the physiological after effects of terrorism. The GTI ranges from 0 (no impact of terrorism) to 10 (highest impact of terrorism).*

for corruption and the impact of terrorist activities between 2003 & 2015. A run of the Spearman's Correlation (r_s) finds a relatively strong negative relationship between these values (r_s = - 0.747) i.e. as the CPI score decreases, the GTI increases. Indeed, in Iraq conflict and insurrection have spawned from a multitude of factors, including ethno-sectarian, religious and tribal. However, the impact of corruption at a state level has indeed contributed significantly to the destabilization of a country and the resulting conflict and insurgent activity.

CHAPTER 3

The distribution of wealth in an economy is a concept which has weighed in significantly to discussions around economic policy, most notably in resource-rich countries. One such policy that addresses welfare in an economy is the direct distribution of resource revenues. Direct distribution is broadly concerned with the allocation of resource revenues, usually in the form of a universal, unconditional cash transfer to the entire population. Direct distribution is born out of the notion that resource-rich economies, particularly those with poor institutional quality often struggle to harness the true potential of their resource endowments and are ultimately led down a path of corruption and pillaging of natural resources for self-enrichment. Direct distribution has been advocated to varying degrees by Palley (2003), Birdsall Subramanian (2004), Gillies (2010), Moss (2011), Devarajan *et al.* (2011), Devarajan and Giugale (2012) and McGuirk, Rajaram & Giugale (2016), to name a few. It is important for resource rich countries such as Iraq to start considering innovative strategies to address the pitfalls of natural resources and ensure sustained poverty reduction and robust economic growth. This chapter will begin with a review of past literature on direct distribution, both conceptually as well as specifically in the case of Iraq. It will then proceed to define and discuss the various methods for resource wealth management which exist. It will then provide some theoretical considerations for direct distribution before closing off with a detailed look at cases of success and failure, where direct distribution has been implemented.

3.1 LITERATURE REVIEW

The paper by McGuirk, Rajaram & Giugale (2016) is one of the more recent literature works which discusses the concept of direct distribution in resource-rich countries. Most past literature works have studied direct distribution from a normative perspective relating specifically to the potential economic and political implications, however few have studied how direct distribution may emerge as a politically rational choice. This policy research paper provides a theoretical model relating to the decision-making process of political leaders to allocate resource revenues optimally between direct cash transfers, expenditure on public goods, power-preserving activities, and personal consumption. The paper finds that that the conditions under which an increased share of resource revenues is spent on citizen welfare include mainly favorable political climates, strict budgetary accountability and undeveloped patronage networks. More relevant to the current study, the paper illustrates that in countries with a high poverty headcount coupled with inefficient public institutions, governments may support the political incentive to provide direct dividend transfers relative to expenditure on public goods.

The paper by Moss (2011) proposes the use of direct distribution (cash transfers) as a mechanism for mitigating the effects of the natural resource curse. The proposal comes amid suggestions that fragile states with a wealth of natural resources are often faced with critical policy questions with respect to the management and spending of resource revenue in a manner that is valuable to the economy. The paper supports the natural resource curse theory by presenting evidence which suggests that the incidence of Macroeconomic instability & export concentration,

poverty, corruption, authoritarianism and internal conflict is often higher in resource-rich countries in comparison to resource-poor countries. The paper supports a policy of cash transfers by suggesting that they create incentives for taxation and subsequently greater scrutiny and accountability over public spending. They are also likely to have an immediate and significant impact on the welfare of poor households, and finally, they can contribute substantially to reducing inequality, particularly if they are executed through a targeted scheme. The paper closes by listing selected risks of implementing the policy as well as the subsequent approaches to mitigate those risks.

Gillies (2010) studied the notion of resource revenue distribution in the context of resource-rich states, with a focus on political feasibility and implications of implementing a system of resource revenue distribution. The paper explains that the political autonomy of the leadership as well as the sustainability of the resource are the most important elements when discussing feasibility. On the side of implications, it is suggested that direct distribution will yield improved levels of governance. The sentiment is shared by Palley (2003) who explains that the reputed benefit of a revenue sharing system is that it provides citizens with a vested interest in the natural resources of a country, thereby creating incentives for greater political involvement to ensure good governance and administration. Gillies (2010) concludes by suggesting that no generic method exists for determining whether distribution is a suitable policy option, rather each influencing element must be evaluated on its individual merits and how well it fits into the desired outcome.

Serving as a mechanism to enhance public expenditure in oil-rich economies, Devarajan *et al*. (2011) proposes that a measure of oil revenues be transferred directly to citizens, with a portion thereof taxed to finance public expenditures. The concept is based on the notion that public expenditure is financed by taxation as opposed to resource revenues accruing directly to the government. The paper also suggests that this approach is likely to increase efficiency due to increased civil scrutiny over the spending of natural resource revenues. The paper first highlights a tendency for public expenditures in oil-rich economies to be less efficient in comparison to those in other developing and frontier markets. A theoretical model is then used to explain why greater transparency and accountability over public expenditures can be facilitated by distributing oil revenues directly to citizens and then taxing them. The paper concludes by applying this theoretical model and illustrating empirically that enhanced civil scrutiny over public expenditure is correlated with better efficiency in government spending, while accountability is stronger in countries with a greater dependency on taxation to finance public spending. McGuirk (2013) supports this conclusion by illustrating empirically that when leaders are in receipt of large, external rents, the burden of taxation can be alleviated from citizens, who will then demand less accountability, eventually resulting in dysfunctional political behavior.

West (2011) specifically discusses the case of Iraq and proposes an oil-based dividend as a mechanism to mitigate the risks associated with Petro-States. The paper first discusses the effects of the dividend in the context of the economic impact. Aside from having an immediate and substantially positive impact on reducing poverty, the paper

highlights that the oil dividend can also contribute towards considerable growth in what has been a rather stagnant private sector in Iraq. Another key factor discussed relates to the political impacts of the dividend in Iraq. The paper suggests that the political economy In Iraq would react positively in response to the dividend, with the relationship between the state and the citizens being strengthened. This is particularly significant in post-conflict situations. The paper highlights the mechanics of the dividend as a challenge, specifically with respect to its administration and governance. Iraq has pre-existing conditions, such as a competitive mobile phone market which could facilitate implementation of the dividend by making available options such mobile phoned-based transfer systems. The paper concludes that while there are difficulties for implementing an oil-based dividend policy in Iraq, the positive economic and political impacts suggest that the benefits outweigh the risks. The paper is however limited in supporting the assertions related to the potential economic impacts given the absence of an empirical analysis. This would therefore endorse the need for an empirical analysis, one of which will be conducted in this dissertation.

With a specific focus on Africa, Devarajan *et al*. (2013) builds on from the work of Devarajan *et al*. (2011) and makes the case for having a policy of direct transfer of resource revenues in selected resource-rich African economies. The proposal of this policy is conceived on the notion that Africa's resource-rich countries have failed to harness the potential of their resource wealth to attain sustained economic growth and poverty reduction, rather it has fueled civil conflict and political instability. The paper applies a theoretical model to considerations that a policy of direct distribution can facilitate a reduction in poverty as well as an increase social welfare, as countries increase both private consumption and the provision of public goods. The paper proposes three key considerations for implementing direct distribution of resource revenues. The first being the macroeconomic impact, where increased private consumption can potentially create short-term external imbalances. The second is that while there may be an argument for privatization of natural resources, direct distribution provides citizens with an individual stake in national resources without distorting market incentives for their exploration and exploitation. Lastly, even in the most institutionally advanced African economies, administering a policy of direct distribution will be costly and likely to require time to implement.

With a specific focus on Iraq, Palley (2003) also links good governance with the implementation of revenue sharing policies. The paper explains that Oil Revenue Distribution Funds (ORDF's) that directly distribute funds to its citizens, act as a means to addressing the natural resource curse. Paley (2003) explains that distributing funds to citizens allows them to lead economic growth by means of consumption spending and stimulating domestic demand in other sectors of the economy. The paper also explains that, specifically in the case of Iraq with a reputation for inherent political instability, the distribution of oil revenue to its citizens provides a means for policy transformation towards prioritising social welfare. Palley (2003) also explains that with an economy which is highly dependent on one sector of the economy, the probability of high unemployment is excessively high. This is evident in the case of oil dependent countries where the oil sector itself is an employer of more semi-to-highly-skilled labour. Consequently, low-to-unskilled workers or even semi-to-highly skilled workers whose skills are not easily absorbed due to the structure of

the economy and are likely to endure sustained periods of unemployment. The allocation of resource revenues to citizens through cash transfers thus provides an income safety net to the population, as well as being an economic stimulator through the consumption linkages.

3.2 RESOURCE WEALTH MANAGEMENT

Resource-rich countries face significant challenges in translating resource wealth into sustained economic and social benefit. A trend common among emerging and developing economies is that resource wealth is often squandered through weak institutions and falls prey to corruption, rent-seeking and patronage funding (Dixon & Monk, 2011). In addition to this, there is a tendency for countries without other well-developed sectors to overly rely on resource wealth, thereby creating an unhealthy dependence on resources, which are often finite and prone to fluctuations. The former is of concern to policy makers when considering the notion of inter-generational equity, which is ensuring that future generations benefit from present exploits of natural resources. An increasingly popular mechanism proposed for mitigating the risks and maximizing the benefit of natural resource wealth is the use of Resource Wealth Management Funds or Sovereign Wealth Funds (SWF). SWF's can take the form of Stabilization or Intergenerational (Saving) funds. Understanding the mechanics of these funds provides insight into how countries can better manage their natural resource wealth.

3.2.1 STABILIZATION FUNDS

Stabilization funds are designed to shelter an economy from the negative effects of resource price fluctuations on government revenue. Stabilization funds provide a measure of fiscal discipline to governments through pre-determined accumulation and withdrawal regulations, both of which are contingent on the price or revenue level of the natural resource (Dixon & Monk, 2011). The excess revenue is saved into the stabilization fund when prices or revenues exceed the pre-determined threshold. Similarly, the government can access the accumulated funds in cases where revenues or prices fall below the pre-determined threshold level. Stabilization funds are generally risk averse and can also be accessed relatively quickly, given that they hold a range of liquid, short-term assets. A major challenge for stabilization funds is the setting of a pre-determined threshold level. These are generally arbitrarily set or calculated based on historical natural resource prices or revenues (Looney, 2006). However, prices for certain resources (such as oil) are highly speculative, given the volatility in the market as well as historical trends not being valuable predictors of future prices.

3.2.2 INTERGENERATIONAL FUNDS

Intergenerational or Saving funds are created for the purposes of safeguarding current wealth for the benefit of present and future generations. These funds generally hold a globally diversified portfolio which offsets some of the country's exposure to resource price volatility, such as in the market for oil (Looney, 2006). Intergenerational/Saving funds are different to Stabilization funds in that their investment portfolios are more risk inclined and hold a range

of fixed-income assets. These funds invest offshore to diversify risk, take demand out of the economy, and limit the appreciation of the real exchange rate. Withdrawal rules for the Intergenerational/Saving funds generally dictate that a specified portion of the smoothed value of the fund be transferred to the government budget every year (Dixon & Monk, 2011). Intergenerational/Saving funds can also develop from Stabilization funds, precisely in cases where the latter consistently accumulates revenues over a long period of time. In this case, the country may opt to set up a Saving Fund for these excess reserves for the purposes of meeting intergenerational equity goals and supporting resourced financed consumption without fueling inflation.

3.2.3 DIRECT DISTRIBUTION FUNDS

In addition to Stabilization and Intergenerational funds, there are also Direct Distribution funds. Direct Distribution funds are different from other funds in that they are generally not stand-alone accounts (but can be), but rather extensions of Intergenerational funds, which transfer a portion of accumulated income directly to citizens in the form of an annual dividends. Few countries have experimented with Direct Distribution funds and fewer yet have succeeded, with the state of Alaska being the only current working example. There is no doubt that there are many resource-rich developing economies who have the capacity to distribute resource wealth to their citizens. However, these very countries often lack the institutional capacity and quality to effective administer and govern these mechanisms. One reason explaining the success of the Alaskan distribution fund is that it is supported by strong institutions with a high level of good governance (Looney, 2006). In addition to this, the success of these funds is also dependent on the political arrangements of the state. Strict legislative oversight is required to ensure that policymakers respect the integrity of fund laws, specifically with respect to withdrawal rules. Indeed, strong political constituency committed to the success of the fund (and the policy as a whole) can realize its benefits.

3.3 DIRECT DISTRIBUTION: THEORETICAL CONSIDERATION

There are various expenditure-related difficulties faced by governments in countries with a plethora of natural resources, most notably so is the decision around the optimal allocation of revenues derived from these natural resources. When considering a policy of direct distribution, a focal point would be to evaluate the inevitable trade-off to expenditure on public goods. Gillies (2010) explains that naturally, countries could use natural resource revenues towards spending on public goods such as educational and transport infrastructure or improving the efficiency of public health and security by increasing the number of human resources available to these areas. However, resource-rich economies often fare poorly in this regard. Reinikka & Svensson (2004) find that in institutionally weak states, expenditure on public investments are prone to leakage, with public funds either misallocated or lost through practices of patronage and corruption. Therefore, there is a need to evaluate the use of direct distribution, not necessarily as an alternative policy but rather one which is complementary.

The notion of institutional quality is a key component when assessing the optimal spending portfolio. McGuirk, Rajaram & Giugale (2016) suggest that countries with weak institutions often lack the technical efficiencies to allocate funds to high-return investments, as well not being able to implement them effectively. This sentiment is also shared earlier by Collier *et al.* (2009). Moss (2011) and Devarajan & Giugale (2012) highlight the inequality of public spending by suggesting the existence of an inherent bias towards greater allocation for urban areas, or those which guarantee electoral support for ruling parties (also where there are networks of patronage). Direct transfers benefit citizens at all levels and provide a layer of security against income volatility and acute deprivation in the event of economic shocks. Furthermore, evidence from Fernald *et al.* (2008), Baird *et al.* (2011), Blattman *et al.* (2013) and Haushofer & Shapiro (2013) suggests that in cases where private citizens were recipients of cash transfers, investments were made into socio-economic and developmental enhancing factors such food security, healthcare, educational attainment and asset ownership, to name a few. It may therefore be optimal to apportion both the distribution of capital and the execution of investments to private citizens. It is important to note that the model below evaluates the optimal allocation of resource revenues as a mechanism to generate electoral support (thereby contributing towards obtaining political stability), which is particularly relevant in the context of the current political discourse in Iraq.

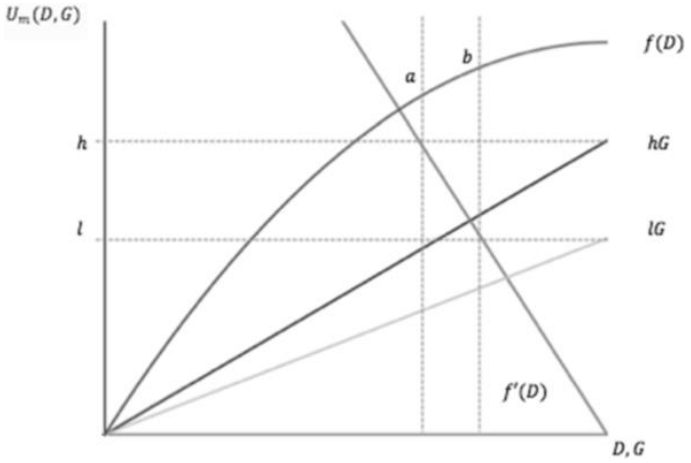
McGuirk, Rajaram & Giugale (2016) provide a theoretical model for the optimal allocation of resource revenues in a case where government seeks to generate electoral support. In addition to direct dividend transfers *D*, government also has the option of generating electoral support by spending a share of revenues G on public investments, such as public infrastructure, social services and human capital development. The challenge facing the government is to identify the bundle (*D, G*) that maximizes the median voter's utility. To find this, leaders must consider the utility function of the median voter. It is important to note that $U_m = \tilde{c}$ is a representation that citizen utility is linear in private consumption, where $\tilde{c}$ is a function of direct transfers. Extending this interpretation to a standard quasi-linear function with diminishing marginal returns from private consumption *c*, and constant returns to public goods *g*, $U_m = \ln c + g$, where $g = \prec G$, eventually arrive to a point where the marginal allocation to G is worth more to the median voter, and thus to the government, than the marginal allocation to *D.*

An example of this can be illustrated by figure 8 below. We first consider the representations below:

- hG = the relationship between public expenditure G and citizen utility $U_{m,}$ ($\prec = h$)
- Concave *f(D)* = represents the relationship between direct transfer *D* and U_m.
- line *f'(D)* = plots the slope of *f(D)*

Up until the point *a*, the returns to direct transfers *D* are higher than the returns to public investment G, i.e. *f'(D) > h*. However, beyond the point *a*, the government will optimally allocate to *G*. The conclusion from this scenario indicates that where the initial level private consumption is lower, the returns to direct dividend transfers are higher, as a result of the concavity of *c* in citizen utility.

FIGURE 8: CHOOSING THE OPTIMAL ALLOCATION BETWEEN DIRECT TRANSFERS AND PUBLIC EXPENDITURE



Source: McGuirk, Rajaram & Giugale (2016)

McGuirk, Rajaram & Giugale (2016) also illustrate a case where a country may have "leaky" public institutions, this is where the technology $\prec$ that converts public outlays G to public goods *g* is less efficient, i.e. $\prec = l$. In this scenario, the government will optimally allocate revenues to direct transfers further beyond point *a* to point *b*; only thereafter will there be an investment into public goods. It is important to note that the concept of inefficient or "leaky" public institutions is particularly relevant to the current context of the study.

In closing, all other factors remaining constant, the model indicates that with respect to countries that experience a higher poverty headcount or with greater inefficiency within its public institutions, government will optimally allocate more resource revenues to direct dividend transfers and less towards its expenditure on public goods.

3.4 EXPERIMENTS WITH DIRECT DISTRIBUTION: REVIEW OF PAST EXPERIENCES

Before countries make the decision to adopt new policies, extensive research is often done into the impacts they have had in other regions. In the case of direct distribution however, it is difficult to advocate for the policy based on the evidence of past experiences. Globally, few countries have considered the possibilities of direct distribution, and even fewer have experimented with them. However, despite the limited exposure of the policy to practical application, the past experiences with it do provide valuable insights into its workings and possible impacts. Arguably, the most famed of experiments with direct distribution is in the case of the oil-rich state of Alaska, which coincidently also happens to have the only existing policy of its nature. Mongolia is another region where a policy of direct distribution had been tested. It is an interesting example in that despite it not being within the context of hydrocarbon related resources, the circumstances which supported the implementation of the policy are similar to the case of Iraq (i.e. the extent of corruption, inefficient public expenditure etc.). Iran, Bolivia and Timor-Leste have

in the past also experimented with direct distribution on some level, however not to the extent to which Alaska has. This section will study the cases of Alaska and Mongolia with respect to their experiences with direct distribution.

3.4.1 THE ALASKAN PERMANENT FUND DIVIDEND

Alaska's history with oil wealth dates back to early 1969, coinciding with the first oil boom. Since then, oil and other hydrocarbon related resources have been essential to the state's economy, accounting for between 65% and 90% of state revenues (McBeath et al., 2008). The industry has also seen its fair share of controversy with the 1989 Exxon Valdez spill and more recently, the disputes related to fracking in the pristine Arctic National Wildlife Refuge. Notwithstanding these elements, downscaling activities in the oil industry would come at a huge cost. The oil industry exerts substantial influence over the economy, not only with respect to generating much of state revenues but also its contribution to employment opportunities. It is estimated that every 1 in 3 Alaskan jobs are either directly or indirectly (through labour funded by oil revenues) dependent on the oil-industry (Goldsmith, 2010). For Alaskan citizens, the oil industry also provides an important source of income, distributed through the Alaskan Permanent Fund Dividend (APFD).

Established in 1982, the APFD is a universal, unconditional cash transfer based directly on the level of government oil revenues, distributed annually. The AFPD is an extension of the Alaskan Permanent Fund, a SWF created in 1976 for the purposes of accumulating annual royalties from the sale of state-owned natural resources, with the funds subsequently invested in a diversified portfolio of equities and fixed-income assets. The principal of the Fund remained fixed, however its earnings could be spent by the state and thus the creation of the Dividend as a wealth distribution mechanism from income earned. This dividend is calculated as 52.2% of the fund's nominal income averaged over five years, divided by the number of eligible recipients. The welfare impacts the PFD suggest that it

FIGURE 9: ALASKAN PERMANENT FUND EVOLUTION

Source: Writers representation, Information from Berman & Reamey (2016)

has experienced significant success since inception. By 2007, poverty in Alaska was the joint second lowest in the United States, despite only having the nineteenth highest per capita income in the country (Segal, 2012). Furthermore, the PFD has also been a significant source of income for rural Alaskans. An analysis of the APFD by Berman & Reamey (2016) finds that annually, the PFD lifts between 15,000-25,000 Alaskans out of poverty

(depending on the precise size of the dividend). Native Alaskans have also benefited tremendously from the PFD, having reduced the number of native Alaskans living in poverty by one-quarter. These results suggest that as a resource sharing policy, the PFD has contributed substantially to ensuring that the natural resources benefit the population, primarily through its impact on poverty and welfare.

In the context of replicating the Alaskan model in other oil producing regions, there are several factors to consider. In perhaps the most obvious ways, Alaska shares very few to almost no similarities to other oil-producing regions in the rest the world. Firstly, as part of the United States, Alaska's government is an advanced, representative democracy with multiple layers of political constraints & balances and strong institutions, which in turn facilitate effective governance and administration of the PFD. Secondly, while the state of Alaska is dependent on oil for the local economy, the United States as a country are not. Therefore, for Alaskans to only benefit from the state's oil wealth does not cause conflict with other states, nor does it adversely affect inequality in the rest of the country. However, consider a case of Iraq where an entire country is dependent on oil, but has only applied a PFD to its oil producing regions. This is likely to generate internal conflict while also creating significant wealth imbalances. Lastly, the disparities which exist in population size also play a key role with respect to challenges of governance and administration. Theoretically, effective policy design and strong institutions to implement them mean that applying a PFD to a larger population size is simply a matter of taking the existing mechanics of the policy to the required scale. In practice however, managing larger population sizes is likely to be more costly and time-consuming, particularly in administering for rural-based population segments.

3.4.2 THE MONGOLIAN HUMAN DEVELOPMENT FUND

There have been cases of countries, rich in resources other oil, which have in the past experimented with sovereign wealth distribution. On such example is the copper-rich region of Mongolia. In the context of evaluating direct distribution in the case of Iraq, the experiences of Mongolia may be more appropriate than those of Alaska for many reasons. Firstly, Mongolia is a developing country and arguably the only one that has introduced natural resource-funded cash transfers. Secondly, much like the case of Iraq, a fragility of allegiances and underperforming institutions has resulted in a relatively unstable political environment (Yeung & Howes, 2015). Lastly, as a consequence of the struggle to maintain the strength of its institutions, corruption has plagued the government, a pattern that is all too familiar in Iraq and other regions.

Mongolia's resources-to-cash scheme was experienced through different phases, influenced largely by the movement in commodity prices. The policy was first proposed by Mongolia's opposition Democracy Party during the 2004 elections, under the banner of the Child Money Program. A key outcome of this was the volume votes received in support of the policy, forcing the ruling People's Revolutionary Party to form a coalition government with the Democracy Party. The CMP commenced in 2006 which handed a monthly transfer of US $2.50 per child to families with at least three children and who fell below the official poverty line measure. The transfers were also conditional,

requiring that the recipient children be attending school (for those over the age of 8), be living with their parents and be up to date with mandatory vaccinations (Yeung & Howes, 2015). The three-child requirement was dropped early after implementation, however other conditional elements continued to be enforced.

After sustained growth in resource revenues in mid-2006, the CMP was replaced with the Universal Child Money Program (UCMP), which entitled all children to a cumulative amount of US $116.19 per year. Concurrently, Mongolia also launched the Mongolian Development Fund (MDF), serving as the country's first attempt at a sovereign wealth fund and a mechanism to legislate the link between government resource receipts and cash transfers (Yeung & Howes, 2015). Having witnessed the gain in political support which followed the proposal of the CMP, the Democratic Party began lobbying for a policy under which every Mongolian would receive cash-transfers. Continued growth in resource revenues supported the Democratic Party proposal and despite criticism and concerns regarding affordability, 2010 saw the creation of the Human Development Fund (HDF), an extension of the MDF which provided each citizen with an annual cash-transfer of US $89.08 in 2010, rising to US $198.84 from early 2011 to mid-2012.

FIGURE 10: MONGOLIAN DISTRIBUTION FUND EVOLUTION

Source: Writers representation; Information from Yeung & Howes (2015)

The universal cash transfer through the HDF was eventually discontinued after proving to be largely unaffordable and was agreed to not be used by any political party for future election campaigns. The Child Money Program was reintroduced in October 2012, having been included in policy plans of both major parties. From 2018 onwards, Mongolia plan to establish the Future Heritage Fund (FHF), a conventional sovereign wealth fund focused on saving and investing resource revenues, earmarking only from 2030 onwards.

The outcomes of the various distribution phases suggest a mixture of success and failure of the policy. Yeung & Howes (2015) find that direct transfers certainly had clear poverty and equity benefits. The HDF contributed to a reduction in nearly a third of poverty, approximately 10% (depending on the year and poverty line used). Similarly, inequality in all years was reduced (to varying degrees) due to the HDF. The conditionality attached the CMP and

UCMP also contributed to a reduction in child mortality, improvements in literacy and schooling participation rates. Lastly, the distribution policies also contributed to improvements in accountability and the extent of corruption. The biggest fallout from these distribution policies was the macroeconomic costs incurred by the state. Design, planning and implementation flaws often led the government having to take loans to meet direct transfer payments, particularly after the 2008/2009 financial crisis triggered a decline in world copper prices. Between 2010 & 2012, Public external debt as a % of GDP rose from 30.8% to 48.3%, with a significant portion of HDF expenditure allocated to repaying the interest on these loans (Yeung & Howes, 2015). Shlilegmaa *et al.* (2013) suggest that the direct transfers also contributed significantly to spikes in inflation, citing the increase in inflation between 2009 & 2012 by just less than 10 percentage points.

Other criticisms of the policies focus mainly on design, administration and implementation. Yeung & Howes (2015) found that whilst the HDF became a significant, if not primary source of income for poor families, it had very little impact on living standards of more affluent population segments. Fritz, Finch and Byambatsogt (2008) suggest that this may well be attributed to high inclusion and exclusion rates during the means testing, thereby hindering the credibility of the system. Lastly, apart from being lengthy, the administrative process also often excluded some of the poorest segments of the population from accessing the transfers, with the time and cost of travelling to distribution centers proving to be a major obstacle. This experience of Mongolia suggests that while there are clear benefits to direct transfers, effective planning, design and implementation are essential in ensuring that it is inclusive, affordable and sustainable to successfully achieve the desired effects.

In considering a policy of direct distribution for Iraq, two key questions need to be answered:

1. What would a policy of direct distribution of resource revenues entail for Iraq?
2. If implemented, what are the potential impacts of this policy for Iraq?

CHAPTER 4

The success of direct distribution as a policy relies significantly on the prevailing political environment, as much as it does on good planning, design and implementation. In more recent times, Iraqi leaders have shown a greater commitment and willingness to pursue a more equitable distribution of income as well as actively seeking to eradicate corruption. Indeed, corruption exists as one of the largest impediments to political stability and greater economic prosperity, and whilst there is enough evidence to suggest that direct distribution can reduce corruption by facilitating improvements in transparency and accountability, it is not feasible to implement a policy purely based on these outcomes without assessing whether it makes good economic sense to do so. The analysis presented here will therefore evaluate the economic impacts of direct distribution. This chapter will begin with a brief overview of the current social security program in Iraq and the past proposals for its reform. It will thereafter begin with the empirical analysis, starting with an illustration of the data/model to be used and the accompanying research methodology. The chapter will then move forward by stating what the assumptions to the model are. The chapter will then proceed to the presentation of the results derived from the simulations in the model, as well as a discussion of the results relating to the feasibility of the policy in the case of Iraq. The chapter will conclude with a brief discussion of the limitations to the model.

4.1 DIRECT DISTRBUTION IN THE CURRENT CONTEXT OF IRAQ

Iraq is no stranger to the concept of distribution, given that it has one of the largest in-kind distribution programs in the world, the Public Distribution System (PDS). The PDS is a universal food security program which allows citizens to purchase a pre-determined list of government-subsidized food commodities monthly (Krishnan, Olivieri & Ramadan, 2017). These commodities include specified portions of wheat flour, rice, sugar, vegetable oil and children's milk. The PDS does indeed play an important role in providing households with the means to obtain essential food commodities but has also come under increasing scrutiny. Among the critiques of the PDS is that it is the system remains inefficient, costly and in more recent times has been undermined by frequent insurgent activity (IMF, 2015). These elements have supported the calls for reform to the current PDS towards more efficient and less costly distribution programs such as cash transfers.

There have been previous attempts by the government to introduce reforms to the current PDS. In August of 2005, the Iraqi government formed a ministerial committee to consider reforming the ration card system (Alzobaidee, 2015). The discussion centered around abolishing the ration card system in favour of cash transfers. It went a step further in 2012 where after a two-year study, the Iraqi cabinet had voted to remove the PDS in favour of direct cash transfers from accumulated oil revenues (AFP, 2012). Among the benefits here was that direct cash transfers would also be higher in value, given that the government would derive additional savings from some of the administrative and logistical burdens that the PDS contained (such as costs of transporting food commodities, running costs at warehouses to maintain food stocks etc.). In both cases, the planned reforms were interrupted by opposition from

rival political factions and outbreaks of internal conflict. The reforms were ultimately set aside with the intention to revisit at a later stage. Indeed, while it is complex to conceive subsidy reform in Iraq under the current challenging environments, the fiscal pressures from the conflict and the decline in oil prices may again catalyze support for these reforms (IMF, 2015).

The concept of direct transfers in Iraq has also strongly been proposed on the basis of advancing developmental outcomes, as well as reducing high levels of corruption. Indeed, several eminent economists and development scholars have advocated for a policy of this nature. Birdsall and Subramanian (2004) proposed a 10-year guarantee, to be written into the Iraq constitution, of a dividend of at least 50% of oil revenues. Clemons (2003) proposed a dividend from an investment fund in the same manner as the US state of Alaska. Palley (2003) argued for a 25% dividend direct from oil revenues, without the intermediation of an investment fund. More recently, West (2011) proposed a US $220 per capita oil dividend rising with expansions in production. Aside from it having been regularly proposed in literature, the distribution of oil revenues was also seriously considered by US authorities after the transitioning of power in 2003 but was not actively pursued due to the politics of the time (West, 2011). The closest Iraq came to the distribution of oil revenues was in 2012, where the ministry of planning announced a proposal to distribute 25% of oil revenue surpluses (US $200 to each citizen) to the population (al-Hassoun, 2012). However, the policy was again postponed over uncertainties regarding its implementation.

Considering the extensive interdependencies which exist in a socioeconomic system, it becomes of paramount importance to assess the economy wide implications of this proposed policy. Theory suggests that when large enough, citizen-based distribution of resource revenues can have significant intersectoral effects on an economy, primarily through the consumptions linkages. In addition to this, it is also expected for there to be a substantial impact on the distribution of income, due to the differential effects of the proposed policy across the various household groups. Owing to the above, it is therefore a requirement that the model being used to evaluate the merits of this policy be able to comprehensively demonstrate its potential economic-wide impacts and the subsequent implications thereof. Indeed, there is evidence to suggest appetite for Iraq to pursue a policy of this nature. What remains however is that if actively pursued, what are the expected/potential impacts of this policy on the Iraqi economy?

4.2 DATA & RESEARCH METHODOLOGY

This analysis will use a Social Accounting Matrix (SAM) to estimate the multiplier effects on households, output and GDP from an exogenous cash transfer to households in the Iraqi economy. A SAM is a representation of all economic transactions in a socio-economic system, taking place during an accounting cycle, usually for a period of one year (Round, 2003). All elements of the economy are illustrated in a single square matrix, where each individual cell is a representation of the economic interaction of one element with another (Appendix A1 provides a schematic of a standard aggregated SAM for an economy). Round (2003) highlights three notable characteristics with respect to

the use of SAM's. Firstly, SAM's are comprehensive in nature as they give a presentation of all activity in an economic system. Secondly, they provide a precise and accurate illustration of the interconnection between the various elements in the economy. Lastly, there is a measure of flexibility both in the extent to which a SAM can be disaggregated as well as the focus on specific elements in the economy. Multipliers are used to illustrate the economy-wide impacts of an exogenous injection. Breisinger *et al.* (2009) indicates that multipliers are useful in determining the level to which a direct effect is amplified by indirect linkage effects. This enables identifying not only what the direct impact of a shock could be, and also the indirect benefits/detriments which may accrue.

SAM's have been influential in studying how various counterfactuals impact the economy with respect to total production, the interaction of different sectors and production factors and the distribution of income among its institutions (Debowicz, 2016). At the heart of the SAM framework is the position of households in the economy. Round (2003) goes as far as to suggest that an accounting matrix can only be described as "social" if it has incorporated a measure of detail relating to the distribution of income to and from households. Past studies by Davies (2007) and Staunton (2011) have used SAM's to assess the impact on the economy and households from an injection of income into one part of the economy. In this instance, Davies (2007) suggests that the impact of an income injection in the economy is contingent on its circulation in the economy. For example, if a portion of the income is used to consume locally produced goods and services, this has an impact of stimulating domestic demand as well as contributing to aggregate output in the economy. SAM's have thus proven to be particularly useful when seeking to assess the economy-wide impact of income injections.

With respect to the nature of the policy being tested, there are a few elements which support the use of a SAM model. Firstly, a consistent data base of the Iraqi economy is required to effectively capture the economy wide effects of the shock, which is difficult given the dearth of reliable data for Iraq. The SAM thus provides an integrated and consistent database providing a representation of the economy, including information on household income and expenditure patterns. Secondly, given that the analysis intends to model the effects of direct cash transfers at specific household groups, the SAM provides a comprehensive data framework which allows for the representation of the differential direct effects which the transfer would have on the different household groups. Thirdly, the policy shock leads to a substantial allocation of income to households. The expenditure of this income can be expected to have economy wide effects through the demand stimulus. The SAM provides a model that can illustrate the demand stimulus effect, as well as capture the inter-industry effects of the shock.

The SAM used for this analysis will be an existing dataset on Iraq for the year 2011, produced by Debowicz (2013). Table 4 (which follows) provides an illustration of the 2011 aggregated SAM for Iraq. The construction of the SAM made use of a variety of data sources including 2013 Iraqi IMF reports and the Iraq Household Socio-Economic Survey (IHSES) for 2007 & 2012.

TABLE 4: 2011 AGGREGATED SOCIAL ACCOUNTING MATRIX (TRILLIONS OF CURRENT IRAQI DINARS)

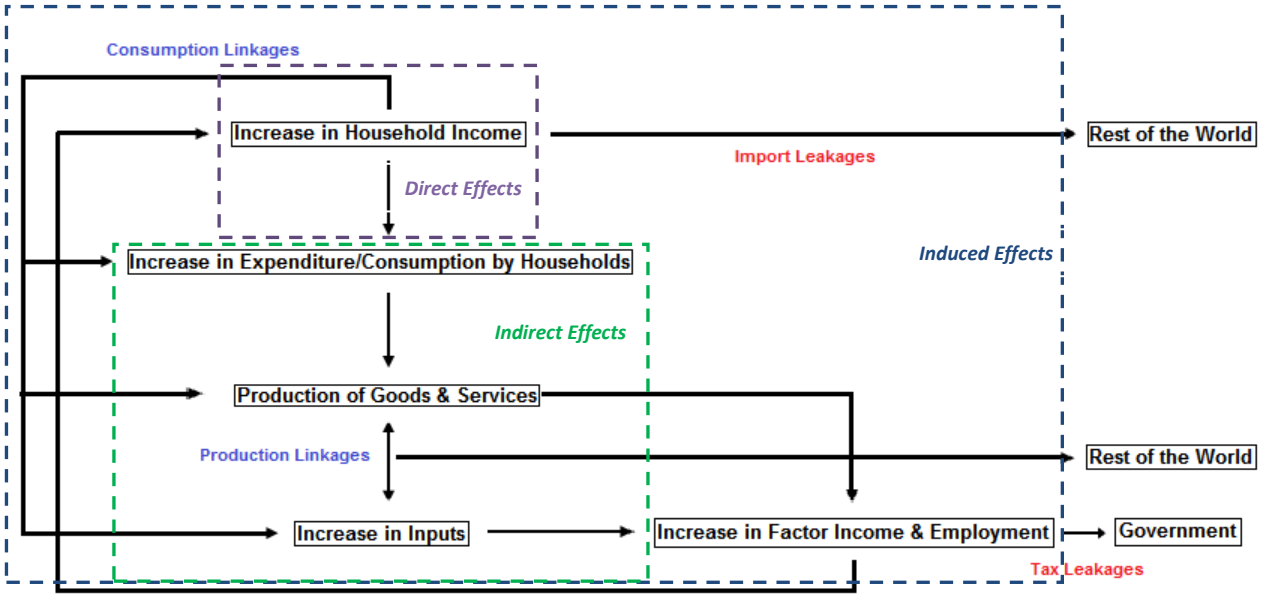
	Activities	Commodities	Labour	Capital and Land	Households	Government	Activity Tax	Sales Tax	Import Tax	Direct Tax	Savings-Investment	Rest of the World	Total
Activities		422.20											422.20
Commodities	232.24				89.74	22.56					38.05	96.53	479.12
Labour	67.71												67.71
Capital and Land	143.59												143.59
Households			67.71	66.38		9.66						0.12	143.86
Government				76.79			-21.34	-6.81	3.23	6.80			58.67
Activity Tax	-21.34												-21.34
Sales Tax		-6.81											-6.81
Import Tax		3.23											3.23
Direct Tax					6.80								6.80
Savings-Investment					47.32	21.43						-30.70	38.05
Rest of the World		60.50		0.42		5.02							65.95
Total	422.20	479.12	67.71	143.59	143.86	58.67	-21.34	-6.81	3.23	6.80	38.05	65.95	

Source: Authors own calculations from Iraq SAM by Debowicz (2013)

4.2.1 MODEL FRAMEWORK

The circular income flow model is applied to evaluate the direct, indirect and induced flow of expenditure for the proposed policy, as illustrated by figure 11 below. The circular flow of income exists as an economy-wide model capturing various inter-industry transactions including, the generation of income through producing activities, the payment of income to factors of production, the distribution of factor and non-factor incomes to households and the expenditure by households on commodities (Round, 2004). These relationships/movements of income between various accounts are illustrated within the basic structure of SAM models. In the model below, the direct effects are the changes in the economy resulting from the direct income transfer to households. The extent of the direct effect is illustrated by the purple dotted area in the figure below. The indirect effect, which are products of the direct effects are related to the inter-industry transactions caused by the initial direct shock to the economy.

FIGURE 11: CIRCULAR FLOW OF INCOME IN THE MULTIPLIER PROCESS



Source: Authors own representation

As shown in the model, the impact of an increase in household disposable income is an increase in the expenditure/consumption of goods and services by households. This demand stimulus would in-turn require an increase in the supply of goods and services available, which require increases in inputs for increased production of goods and services. The indirect effects are illustrated by the green dotted area in the figure above. Lastly, the induced effects represent the changes in household expenditure due to the additional income generated by the changes (increases) in the production. As more factors of production are employed (one of these being labour) to meet the increased demand for goods & services, additional income therefore accrues to households (labour). The induced effects are illustrated by the blue dotted area in the figure above. These multiplier effects of transferred cash are therefore observed as comprehensive criteria that measure the success of cash transfer programs.

TABLE 5: BASIC SOCIAL ACCOUNTING MATRIX STRUCTURE

		EXPENDITURE				
		Production Activities	Production Factors	Institutions	Other Accounts	Total
INCOME	Production Activities	$T_{1,1}$ Intermediate demand	$T_{1,2} = 0$	$T_{1,3}$ Final demand	X_1 Exports and investments	Y_1 Total output and demand
	Production Factors	$T_{2,1}$ Value added to production sectors	$T_{2,2}$	$T_{2,3}$	X_2 Production factor income from other accounts	Y_2 Factorial Income distribution
	Institutions	$T_{3,1}$	$T_{3,2}$ Income allocation to institutions	$T_{3,3}$ Institutional transfers	X_3 Foreign Transfers	Y_3 Institutional Income distribution
	Other Accounts	L_1 Imports, indirect taxes	L_2 Other factor payments	L_3 Savings	L_4 Transfer and other accounts	Y_4 Other income
	Total	Y'_1 Total input and supply	Y'_2 Production factors expenditure	Y'_3 Institutional expenditures	Y'_4 Other expenditures	

Source: Fathurrahman & Soytas (2015)

4.2.2 MATHEMATICAL SAM MODEL

Table 5 illustrates the basic structure of the SAM. The production activities represent inter-industry transactions, as well as the industrial output and sale of intermediate and final products. The production factors are a representation of labour and capital factor transactions. Institutions are a representation of economic activities of households, corporations and government, with households usually disseminated into groups or quantiles based on income levels. Other accounts are a representation of taxes/subsidies, investment and the external sector (rest of the world).

$T_{1,1}$ is a representation of the intermediate demand of goods and services, while the final demand of goods and services by institutions are represented by $T_{1,3}$. When no economic transactions occur between corresponding accounts, cells are given a zero value ($T_{1,2}$; $T_{2,2}$; $T_{2,3}$ & $T_{3,1}$). Generally, production activities, factors and institutions (excluding government) are endogenous accounts, whilst all other accounts are considered exogenous.

Mathematically, income distributions of endogenous accounts are illustrated below:

Production Activities → $\boldsymbol{Y_1 = T_{1,1} + T_{1,3} + X_1}$

Production Factors → $\boldsymbol{Y_2 = T_{2,1} + X_2}$

Institutions → $\boldsymbol{Y_3 = T_{3,2} + T_{3,3} + X_3}$

The coefficient matrix C is obtained where each relevant T column is divided by each relevant Y

$$\boldsymbol{C = \begin{pmatrix} T_{1,1}/Y_1 & 0 & T_{1,3}/Y_3 \\ T_{2,1}/Y_1 & 0 & 0 \\ 0 & T_{3,2}/Y_2 & T_{3,3}/Y_3 \end{pmatrix} = \begin{pmatrix} C_{1,1} & 0 & C_{1,3} \\ C_{2,1} & 0 & 0 \\ 0 & C_{3,2} & C_{3,3} \end{pmatrix}}$$

The SAM framework is therefore represented in the matrix below:

$$\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \end{bmatrix} = \begin{bmatrix} C_{1,1} & 0 & C_{1,3} \\ C_{2,1} & 0 & 0 \\ 0 & C_{3,2} & C_{3,3} \end{bmatrix} \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \end{bmatrix} + \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix}$$

In linear form, the SAM framework can be expressed as below:

$$\boldsymbol{Y = CY + X} \quad \textbf{(1)}$$

From (1): $\boldsymbol{Y - CY = X}$ **(2)**

From **(2)**: $\boldsymbol{Y\,(I - C) = X}$, Where $\boldsymbol{I}$ = Identity Matrix **(3)**

Inverting **(3)** gives (the Leontief Inverse): $\boldsymbol{Y = (I - C)^{-1} X}$ **(4)**

If $\boldsymbol{M = (I - C)^{-1}}$

$\therefore$ in matrix form: $\boldsymbol{\Delta Y = M \Delta X}$ **(5)**

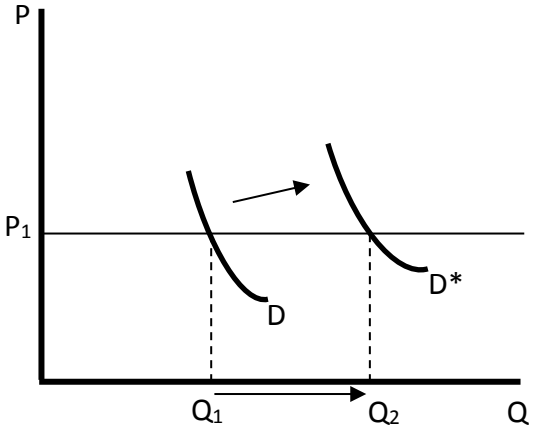
4.3 MODEL ASSUMPTIONS

With respect to the proposed model, there are a few key assumptions which need to be considered:

The first of these assumptions relate to the determining of the endogenous and exogenous components of the model. Ordinarily, the government account is set as exogenous, given that government expenditure is determined through policy. For the savings-investment accounts, where there are no dynamic features to a model (as in this case), the savings-investment accounts are determined exogenously. Given that the external sector is positioned outside of any domestic market control, the rest of the world account will be treated as exogenous. All household and production (activities and commodities) accounts will be treated as endogenous in the model. The implication here is that factor income generated through production that is transferred to households, re-enters the model in form of expenditure.

The second assumption to the model is two-fold, relating to fixed prices and excess supply. Figure 12 provides a graphical representation of these assumptions. When the model is used to assess the post-shock (income injection) circulation of income in the economy, the assumption here is that there is excess capacity in all sectors and unemployed (or underemployed) factors of production. In cases where capacity constraints are applied to the model,

FIGURE 12: FIXED PRICE/EXCESS SUPPLY CAPACITY ASSUMPTION



Source: Authors own representation

it is expected that the multipliers will overestimate the total effects of the shock. Where the fixed price assumption is void, it is expected that prices would rise/fall to balance the excess demand/supply in the market. As a result, any

changes in prices are likely to mitigate the total effects implied by the fixed price model. Cash transfers are likely to only stoke inflation when markets are not functioning well enough to accommodate increase demand. Therefore, the model assumes that markets can respond appropriately to increases in consumer liquidity.

The third assumption to the model relates to the reaction of the exogenous components in response to the initial income shock. The effects on the exogenous accounts are as a result of the initial shock as well as by changes in the leakages from endogenous to the exogenous accounts, as the exogenous accounts as a group become balanced. In the model, beyond this no further reactions occur within the exogenous accounts. In practice however, this may not be the case. Therefore, multiplier effects are potentially being under-estimated in the model.

The fourth assumption relates to the propensities, where the income elasticity is considered to be unitary in the model. Therefore, the average expenditure propensities are assumed to apply to any incremental income injection. Round (2003) and Davies (2007) suggest that while this is indeed an unrealistic assumption, it is largely unavoidable in analysis of this nature. It is also considered a standard assumption with respect to multiplier theory.

4.4 RESULTS & ANALYSIS

4.4.1 SIMULATION DESCRIPTIONS

The analysis will present three distribution scenarios for oil revenue-funded cash transfers to Iraqi households. Given that there are no price controls, there is the option to make the choice of transfer level arbitrary as it is a linear model. However, the previously proposed 25% distribution of oil revenue surpluses (US $200 per capita) will be used as reference point. While the level of transfer per capita will differ across all scenarios (given that there will be variations in the program design of the transfers), the aggregated transfer to households for all will be equal i.e. 7.13 trillion ID.

*The exchange from US $ to ID is based on the official 2011 period average of 1170 ID per US $1.

Each distribution scenario is specified below:

1. 234 000 ID (US $200) distributed as a Universal Transfer Program to each citizen in the economy.

2. 266 305 ID (US $227) distributed to all household quantiles excluding urban and rural quantile 5. This scenario is designed to illustrate the impact of a Targeted Transfer Program on the economy. This scenario attempts to model the distribution of additional income to all households excluding, the wealthiest quantiles in each geographical segment.

3. 360 454 ID (US $308) distributed to household quantiles with a lower per capita income than 4 500 000 ID per year. As in the case of scenario two, this scenario is designed to illustrate the impact of a Targeted

Transfers Program on the economy, in this case however, specifically the impact on lower-income households only.

In order to simulate the per capita cash transfer using the SAM, the aggregate transfer totals are allocated between 12 household quantiles. It is important to note that some of the data used to guide these simulations are obtained from outside the SAM model. These primarily include academic literature and official government communication (reported through various media sources). Table 6 shows the income and population by representative household group. For each representative household group/quantile, the annual household income, population size, average household size, annual per capita income and estimated number of households are shown. The estimated number of households is used to calculate the aggregate cash distribution to each household quantile. In each of the simulations, the per capita transfer is equal, however given that household sizes differ the total allocated to each quantile category will differ.

TABLE 6: INCOME AND POPULATION BY REPRESENTATIVE HOUSEHOLD GROUP (2011)

	*HHI (TRILLION ID PER YEAR)	POPULATION (MIILIONS)	AVERAGE HOUSEHOLD SIZE	**PCI ('000 ID PER YEAR)	***ESTIMATED NUMBER OF HOUSEHOLDS
RURAL FEMALE HEADED	1.4	0.6	5.7	2488	105263
RURAL QUANTILE 1	6.5	3.8	9.5	1710	410526
RURAL QUANTILE 2	4.5	1.9	7.6	2407	250000
RURAL QUANTILE 3	4.2	1.3	6.9	3370	188406
RURAL QUANTILE 4	3.7	0.8	6.1	4657	131148
RURAL QUANTILE 5	3.2	0.4	5.2	7484	76923
URBAN FEMALE HEADED	10.2	2.3	5.9	4477	389831
URBAN QUANTILE 1	7.7	3.6	9	2167	400000
URBAN QUANTILE 2	11.7	4.1	7.7	2861	545455
URBAN QUANTILE 3	18.4	4.2	7	4350	614286
URBAN QUANTILE 4	24.2	3.9	6	6177	650000
URBAN QUANTILE 5	47.6	3.2	5	14649	660000
TOTAL	143.5	30.1			4421837

Source: Debowicz (2013 & 2016), based on 2011 Iraq SAM & IHSES 2007, 2012

* HHI refers to cumulative Household Income per quantile (per year)

**PCI refers to the Per Capita Income i.e. per citizen income (per year) in each quantile

***Estimated Number of Households based on authors approximation = $\frac{POPULATION}{AVERAGE\ HOUSEHOLD\ SIZE\ (PER\ QUINTILE)}$

Table 7 specifies the cumulative transfer level per household quantile in each of the four scenarios. There is an important perspective here with respect to the design of the cash transfer. Given that the aggregated transfer to the economy is consistent for all scenarios, poorer households benefit disproportionately with targeted programs. Indeed, the below table only illustrates the direct effects of the transfer, however the indirect and/or induced effects (too be illustrated further on) may also benefit household quantiles who are excluded from the transfers. The direct transfers below also show that the policy is redistributive for all scenarios, in that it benefits poor households more

as a share of their initial income. Also, the targeted programs tend to be more effective given that low income households (specifically those which are rurally located) tend to spend a greater proportion of their income on goods with low leakages (e.g. lower taxes, lower savings, purchase of goods with low import intensity). However, as noted by Yeung & Howes (2015) in the case of Mongolia, the cash transfers tend to have no real impact on living standards

TABLE 7: ANNUAL PER CAPITA CASH TRANSFER PER HOUSEHOLD QUANTILE PER SCENARIO

	UNIVERSAL CASH TRANSFER (TRILLION ID PER YEAR) 234 000 ID PER CAPITA OIL REVENUE SURPLUS (SAVINGS)		TARGETED CASH TRANSFER (TRILLION ID PER YEAR) 266 305 ID PER CAPITA OIL REVENUE SURPLUS (SAVINGS)		TARGETED CASH TRANSFER (TRILLION ID PER YEAR) 360 454 ID PER CAPITA OIL REVENUE SURPLUS (SAVINGS)	
	Aggregate Transfer (Trillion ID)	% of HHI	Aggregate Transfer (Trillion ID)	% of HHI	Aggregate Transfer (Trillion ID)	% of HHI
RURAL FEMALE HEADED	0.140	9,70%	0.160	11,10%	0.216	14,96%
RURAL QUANTILE 1	0.913	13,52%	1.039	15,37%	1.406	20,84%
RURAL QUANTILE 2	0.445	9,57%	0.506	10,92%	0.685	14,77%
RURAL QUANTILE 3	0.304	7,06%	0.346	8,00%	0.469	10,88%
RURAL QUANTILE 4	0.187	5,00%	0.213	5,67%	-	-
RURAL QUANTILE 5	0.094	2,89%	-	-	-	-
URBAN FEMALE HEADED	0.538	5,23%	0.613	5,96%	-	-
URBAN QUANTILE 1	0.842	10,76%	0.959	12,27%	1.298	16,59%
URBAN QUANTILE 2	0.983	8,31%	1.118	9,42%	1.514	12,76%
URBAN QUANTILE 3	1.006	5,46%	1.145	6,23%	1.550	8,42%
URBAN QUANTILE 4	0.913	3,78%	1.039	4,30%	-	-
URBAN QUANTILE 5	0.772	1,64%	-	-	-	-

Source: Authors own calculations

of wealthier, more affluent citizens (at least through the direct effects). Similarly, in the case of Iraq, Krishnan *et al*. (2017) suggest that for rich households, expenditure on food items subsidized through the PDS constitutes a relatively small portion of total food expenditure. Therefore, low-income targeted cash transfer programs are likely to be more influential than universal programs. In the case of Iraq, a targeted cash transfer program can also have a greater impact on poverty reduction, given that an increase in the level of cash transfer may be distributed to poor households. It can also contribute to reducing inequality and income disparities between rich and poor households.

4.4.2 HOUSEHOLD INCOME EFFECTS (SCENARIO 1, 2 & 3)

Table 8 is the first of the model simulation results illustrating the changes in household income in each of the three distribution scenarios. As described in the model framework, household incomes are impacted through direct, indirect and induced effects. In this instance, household incomes are directly increased through the provision of the cash transfer; and indirectly through increases in output (increase in factor payments). Figures 13 – 15 graphically illustrate the direct and indirect/induced effects per household quantile in each of the three scenario variations. In scenario 1, the provision of the cash transfer increases aggregate HHI by 9.26% (13.32 Trillion ID). The indirect/induced effects account for approximately 46.41% of the aggregate increase in HHI. The implication here is

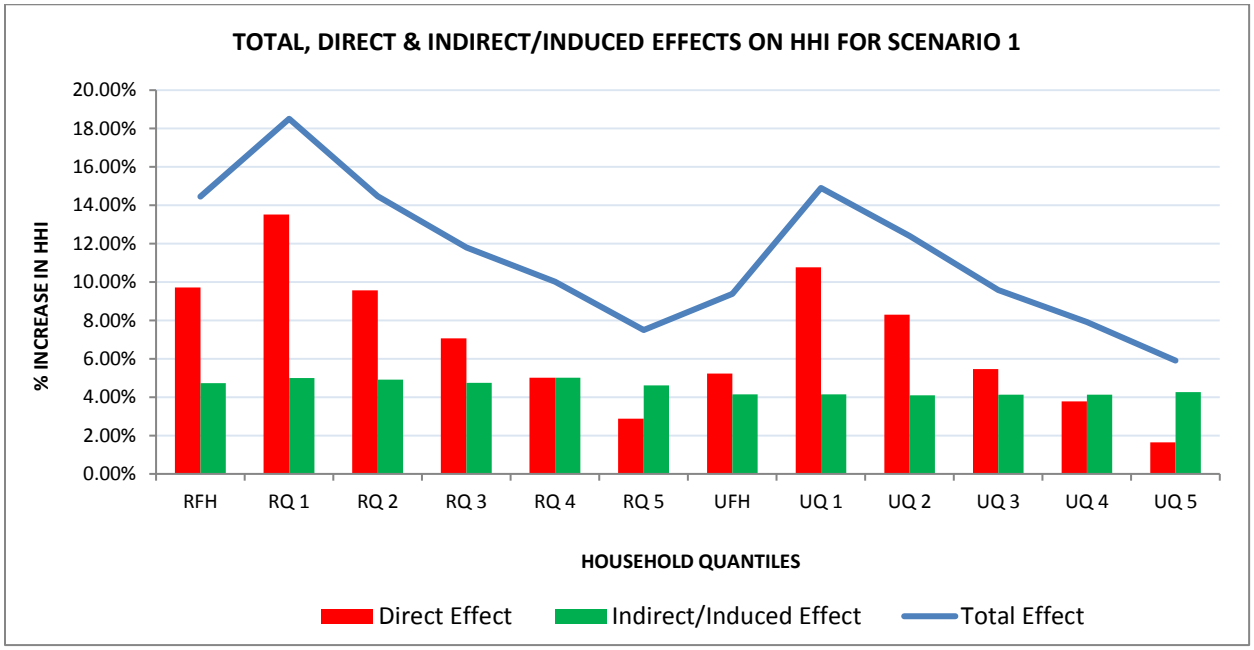
TABLE 8: HOUSEHOLD INCOME CHNAGES: NOMINAL VALUE (TRILLION ID) & PERCENTAGES

	INITIAL VALUE	SCENARIO 1		SCENARIO 2		SCENARIO 3	
	(Trillion ID)	Nominal (Trillion ID)	% Δ	Nominal (Trillion ID)	% Δ	Nominal (Trillion ID)	% Δ
Rural Female-Headed Households	1.44	0.21	14.45%	0.23	15.96%	0.29	20.08%
Rural Quantile 1 Households	6.75	1.25	18.51%	1.39	20.56%	1.77	26.24%
Rural Quantile 2 Households	4.65	0.67	14.47%	0.74	15.97%	0.93	20.05%
Rural Quantile 3 Households	4.31	0.51	11.80%	0.56	12.94%	0.69	16.00%
Rural Quantile 4 Households	3.74	0.37	10.02%	0.41	10.91%	0.20	5.46%
Rural Quantile 5 Households	3.25	0.24	7.49%	0.16	4.77%	0.16	4.96%
Urban Female-Headed Households	10.29	0.97	9.38%	1.05	10.21%	0.45	4.38%
Urban Quantile 1 Households	7.83	1.17	14.91%	1.29	16.50%	1.64	20.96%
Urban Quantile 2 Households	11.84	1.47	12.40%	1.62	13.65%	2.03	17.11%
Urban Quantile 3 Households	18.43	1.77	9.58%	1.92	10.44%	2.35	12.76%
Urban Quantile 4 Households	24.14	1.91	7.91%	2.06	8.53%	1.05	4.35%
Urban Quantile 5 Households	47.19	2.79	5.91%	2.07	4.38%	2.13	4.50%
TOTAL	143.86	13.32	9.26%	13.49	9.38%	13.69	9.52%

Source: Authors own calculations

that for each 1 Iraqi Dinar transfer, total HHI rises by a multiple of 1.86 (13.32/7.13). This reflects the importance inter-industry linkages in driving the overall results. With respect to these results, there is substantial variation across all household categories reflecting the combination of differences in the direct transfer (as a share of initial income)

FIGURE 13: TOTAL, DIRECT & INDIRECT/INDUCED EFFECTS ON HHI FOR SCENARIO 1

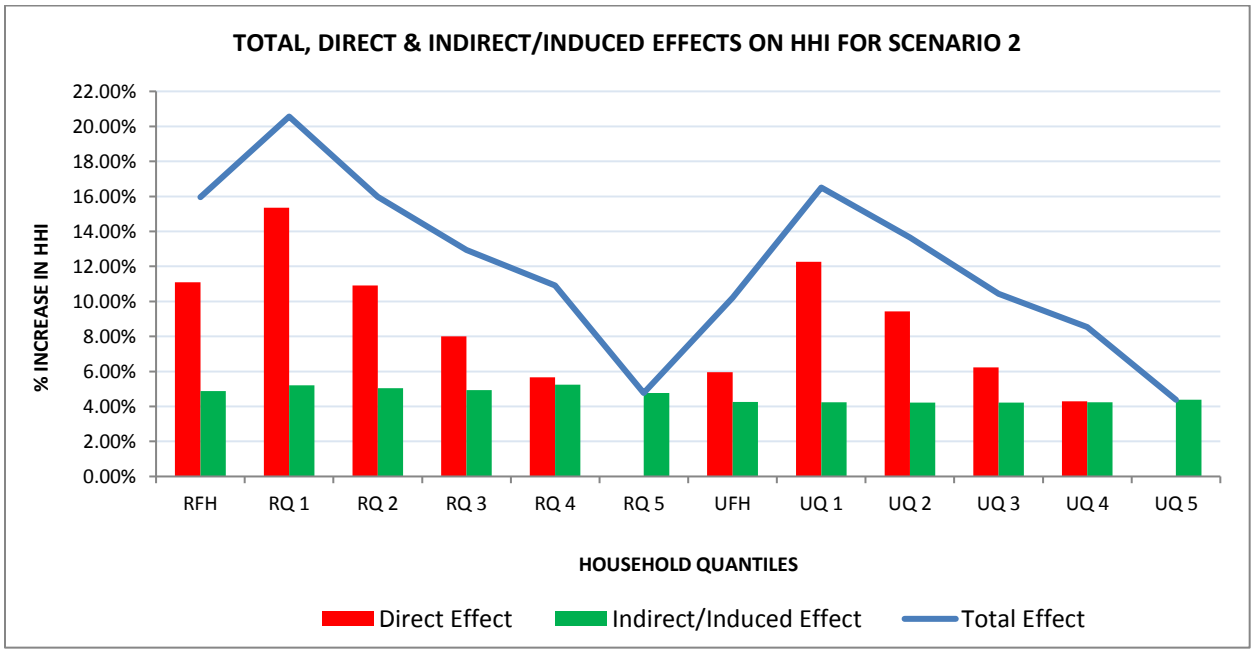


Source: Authors own representation

and the importance of indirect effects. As expected, the influence of the direct effects (impact of the transfer) decreases as initial HHI increases. The indirect/induced effects of the transfer are reasonably consistent across all household groups as well as geographical location. Generally, higher income households would mostly benefit from increased consumption, being owners of factors of production. Lower income households benefit primarily through increased demand for labour (to meet the increased demands). However, there does appear to be a marginally larger indirect/induced effect on rural households. This is attributed to the agricultural expenditure composition of the increased consumption, given that agricultural activities are primarily executed in rural regions.

In scenario 2, the provision of the cash transfer increases aggregate HHI by 9.38% (13.49 Trillion ID). The indirect/induced effects account for approximately 47.09% of the aggregate increase in HHI. The effect here is that for each 1 Iraqi Dinar transfer, total HHI rises by a multiple of 1.89 (13.49/7.13). It is important to note that while the per capita level of the transfer increases, the aggregate transfer remains consistent. There is an important perspective here with respect to the outcome of scenario 2, given that the design of the scenario simulates a targeted program. Despite the targeted programs excluding certain household groups from a direct increase in their

FIGURE 14: TOTAL, DIRECT & INDIRECT/INDUCED EFFECTS ON HHI FOR SCENARIO 2



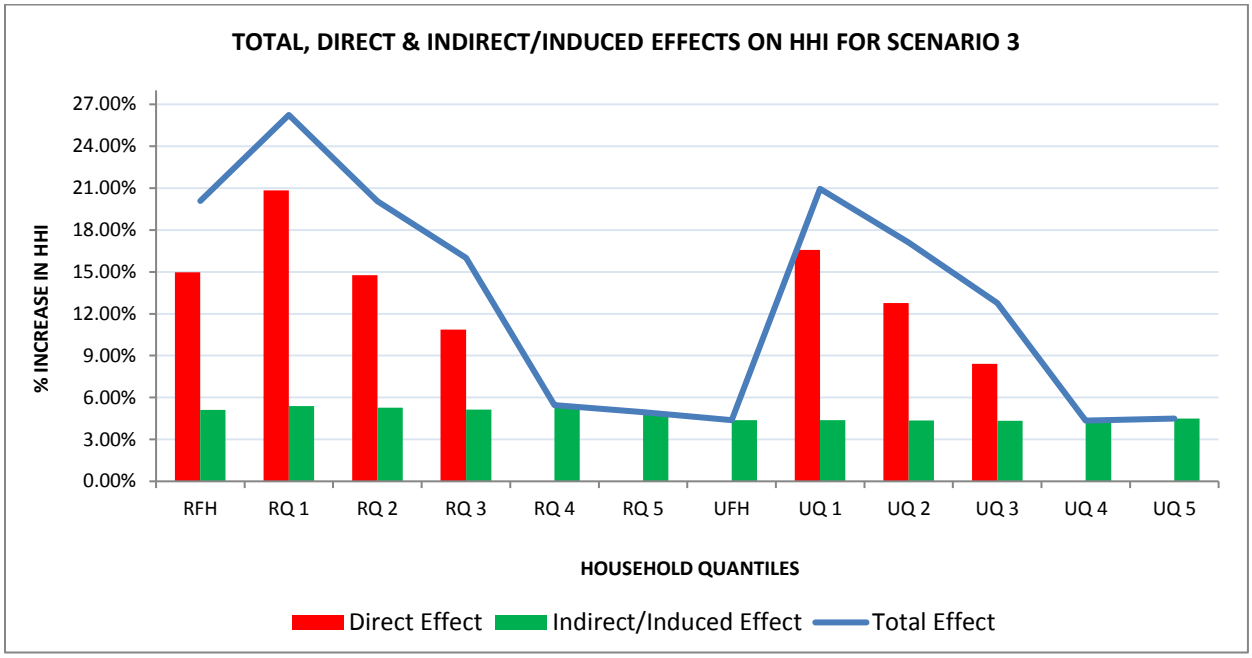
Source: Authors own representation

income, there are still likely to be benefits accrued to these household groups via the indirect effects, as illustrated by the increase in HHI for the excluded household groups in scenario 2 (Rural & Urban Quantiles 5). This again highlights the importance of the inter-industry linkages and the multiplier effects of the cash transfer. Across all household quantiles, the indirect/induced effects for scenario 2 are larger than those in scenario 1. It is plausible to suggest that as lower-income households receive a larger level of transfer through the targeted program, they are

also likely to spend a greater percentage of their income and thereby amplifying the multiplier effect. Targeted programs may also be preferred given that they are pro-poor in nature and facilitate greater equity in the distribution of wealth.

In scenario 3, the provision of the cash transfer increases aggregate HHI by 9.52% (13.69 Trillion ID). The indirect/induced effects account for approximately 47.86% of the aggregate increase in HHI. The implication here is that for each 1 Iraqi Dinar transfer, total HHI rises by a multiple of 1,92 (13.69/7.13). In this scenario, the simulation focuses exclusively on lower income households, specifically those with an annual per capita income of less than 4.5 Million ID. In comparison to scenario's 1 & 2, scenario 3 yields the greatest impact on household incomes, both through the direct and indirect/induced effects. The importance of the indirect/induced effects are again highlighted here, with these effects being largest for non-recipient household quantiles, in both the rural and urban locations. As noted earlier, it is likely that income among these higher-income households is being driven through the increased income (and consumption) by recipient households, as the ownership of factors of production (such as land and capital) are concentrated among the higher income households.

FIGURE 15: TOTAL, DIRECT & INDIRECT/INDUCED EFFECTS ON HHI FOR SCENARIO 3



Source: Authors own representation

The expenditure composition related to the increased level of consumption also provides insight into the factors which drive the indirect effects on both rural and urban Female-Headed Households. As to be discussed in Tables 10 & 11 which follow, the impact of the shock stimulates demand for agriculture products. Al-Haboby *et al.* (2014) notes that while the labour market and agriculture sector are dominated by males, the highest share of female labour is

active in the agriculture (1st) and service (2nd) sectors. The results therefore suggest that the increased income for Rural Female-Headed Households (through the indirect/induced effects) is being driven by the increased demand for female labour (unskilled & semi-skilled), owing to the increased demand for agricultural produce. It is plausible to suggest that in the case of the Urban Female-Headed Households, increased income could then be driven by the increased demand in the services sector. However, given the design of the SAM in consolidating a number of accounts under "Other Services", it is challenging to ascertain precisely which services are driving the increased demand in the services sector.

In analyzing the effectiveness of cash transfers, it is also important to assess the measure of redistribution in each of the scenarios. By their nature, universal transfer programs are redistributive, but not necessarily progressive/pro-poor. This does not however discredit the effectiveness of the program with respect to its impact on the economy, which was shown to be significantly positive. The targeted programs are however both redistributive and pro-poor, albeit primarily through the direct effects. The results suggest that the indirect/induced effects tend to be larger for higher-income households. As previously discussed, higher-income households being owners of factors of production benefit through increased income (& consumption) in the economy. The mutual benefit accrued to both recipient and non-recipient households further support the notion that targeted programs are more effective and yield greater value to the economy than universal programs.

4.4.3 WELFARE EFFECTS - REPLACEMENT OF THE PDS WITH CASH TRANSFERS (SCENARIO 4)

In the current context of Iraq, it can be argued that expenditure on an additional social security program may not be feasible or sustainable in the short-term, particularly when considering the large fiscal outlays required for the restoration of key infrastructure damaged during the siege of Mosul and other regions by ISIS. Should a policy of cash transfers be considered, it may then be more appropriate (at least in the short/medium-term) to consider the financing of a cash transfer program with the reallocation of funds from the existing PDS. Indeed, earlier sections briefly discussed Iraq's current position with respect to its PDS and cited a number of studies which have supported the need for its reform. Critiques of the Iraqi PDS often highlight the excessive administration costs of the program, specifically with respect to the large-scale operations required for procurement, transportation, storage and distribution of subsidized food items (Krishnan, Olivieri & Ramadan, 2017). Indeed, the monetization of the PDS through cash transfers would significantly reduce the costs of administering the program. It would also potentially increase the value-added and multiplier effects in the national economy.

To assess the welfare effects on Iraqi households from the replacement of the PDS with a cash transfer program, scenario four will be introduced. Scenario four will model the net welfare effects on Iraqi households by illustrating the net welfare effect between:

a) The direct effects of a Universal Cash Transfer program. This will be demonstrated by taking the cumulative expenditure on the PDS (6,81 Trillion ID) and distributing this equally to all citizens in each household group (an annual per capita transfer of approximately 223 325 ID or US $190); and

b) The welfare loss (as a % of initial HHI) to each household quantile from the removal of the PDS. This will be demonstrated by calculating the implicit reduction in HHI for each household quantile resulting from the removal of the subsidy. The method for calculating the implicit reduction in HHI per quantile is as follows:

$$\left(\frac{TOTAL\ HOUSEHOLD\ EXPENDITURE\ ON\ PDS\ ITEMS\ (EACH\ QUANTILE)}{TOTAL\ HOUSEHOLD\ EXPENDITURE\ ON\ PDS\ ITEMS\ (ALL\ QUANTILES)}\right) \times TOTAL\ EXPENDITURE\ ON\ PDS$$

Table 9 illustrates the nominal value and percentage change in HHI per quantile for (a) the implicit reduction in HHI associated with the removal of the subsidy; (b) the impact of a cash transfer on HHI and (c) the overall net effect.

TABLE 9: NET WELFARE EFFECT - REPLACEMENT OF THE PDS WITH CASH TRANSFERS

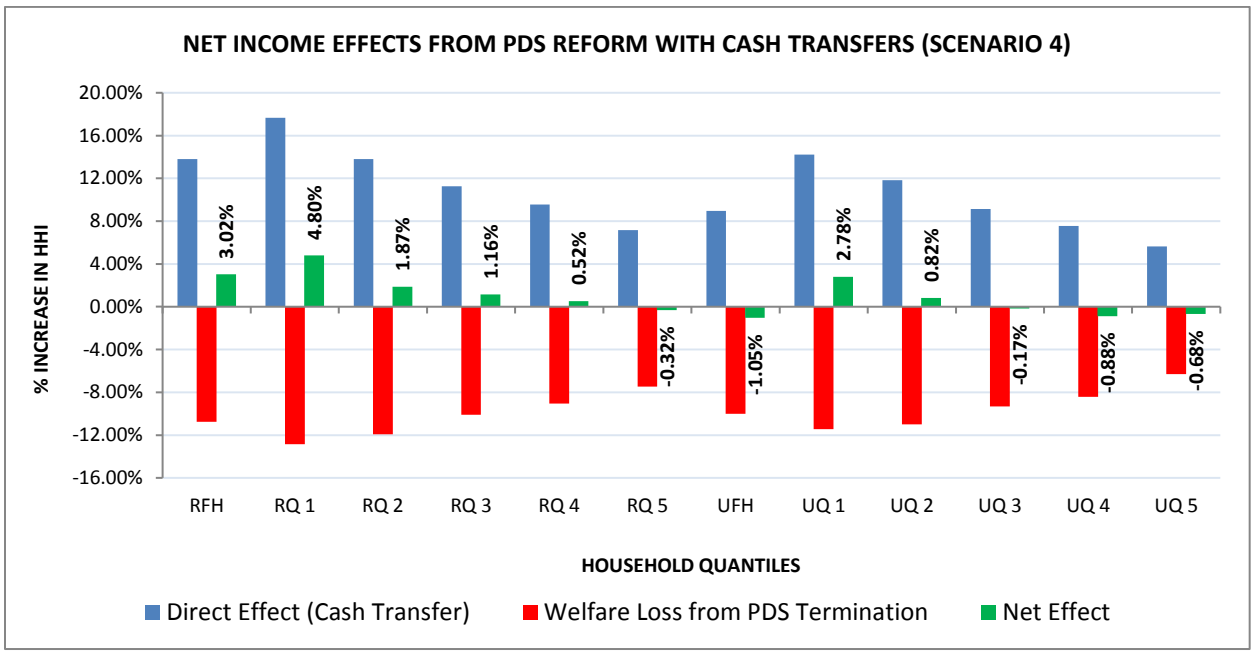
	REMOVAL OF SUBSIDY		DIRECT TRANSFER		NET EFFECT	
	Nominal (Trillion ID)	% Δ HHI	Nominal (Trillion ID)	% Δ HHI	Nominal (Trillion ID)	% Δ HHI
Rural Female-Headed Households	-0,093	-10,77%	0,134	13,79%	0,041	3,02%
Rural Quantile 1 Households	-0,559	-12,86%	0,871	17,67%	0,312	4,80%
Rural Quantile 2 Households	-0,345	-11,94%	0,424	13,81%	0,079	1,87%
Rural Quantile 3 Households	-0,248	-10,11%	0,290	11,26%	0,043	1,16%
Rural Quantile 4 Households	-0,166	-9,04%	0,179	9,57%	0,012	0,52%
Rural Quantile 5 Households	-0,105	-7,47%	0,089	7,15%	-0,015	-0,32%
Urban Female-Headed Households	-0,632	-10,00%	0,514	8,95%	-0,118	-1,05%
Urban Quantile 1 Households	-0,594	-11,45%	0,804	14,23%	0,210	2,78%
Urban Quantile 2 Households	-0,852	-11,01%	0,938	11,83%	0,086	0,82%
Urban Quantile 3 Households	-1,009	-9,32%	0,960	9,15%	-0,049	-0,17%
Urban Quantile 4 Households	-1,106	-8,43%	0,871	7,55%	-0,235	-0,88%
Urban Quantile 5 Households	-1,104	-6,32%	0,737	5,64%	-0,367	-0,68%
TOTAL		**-118,70%**		**130,60%**		**11,90%**

Source: Authors own calculations

As previously discussed, ascertaining whether the net effect yields any welfare loss is a key component in determining whether the replacement of food subsidies with cash transfers is a viable option. The results show a strong positive net effect on the economy, with an overall increase in HHI of 11.90%. An interesting result emerges though with respect to the per quantile net effects. There is a relatively strong positive net effect on the lower-income quantiles (UFH, RQ1, RQ2, RQ3, UQ1 & UQ2), with higher-income quantiles (RQ5, UFH, UQ4, UQ5) primarily having a negative net effect, albeit relatively small. It is possible that the effects on the lower-income households are likely due to the sensitivity in their HHI, with the cash transfer accounting for a greater share of the initial HHI. It is important to note however that the existence of negative effects for higher-income households does not

necessarily discredit the effect of the cash transfers. The impacts illustrated here do not consider the indirect/induced effects of the transfer (through the consumption linkages), which based on the results of scenarios 1,2 and 3 were shown to be significant, particularly for the higher-income households. It is therefore plausible to suggest that the multiplier effects of cash transfers can be expected to have an even greater positive effect on HHI.

FIGURE 16: NET INCOME EFFECTS FROM PDS REFORM WITH CASH TRANSFERS (SCENARIO 4)



Source: Authors own representation

It is important to note that the removal of the food subsidies can potentially lead to an inflationary effect for goods in the PDS food-basket. However, as will be illustrated in the sectorial output changes (Table 11 which follows), the change in consumption patterns are such that the highest growth occurs for goods not previously subsidized through the PDS. This would limit the inflationary effect associated with the removal of subsidies and support the notion that the provision of cash transfers grants citizens greater autonomy to spend on goods more aligned to individual preferences/needs.

Monetization of the PDS can potentially yield considerable static and dynamic benefits to the Iraq economy compared to that of the PDS. However, if the PDS is to be monetized, it must be done with considerable attention given to the method of administering the program. This is particularly significant when considering the complexities relating to the large numbers of recipients involved and political sensitivity of the proposed transformation. Indeed, the advancement of mobile technology in Iraq presents an efficient and cost-effective method with which to administer these cash transfers. Various aid organizations who have in the past delivered humanitarian cash transfers to displaced Iraqi citizens have expressed the efficiency and relatively inexpensive nature of these systems

(UNFAO, 2017). In addition to this, program design also requires good governance to minimize fraud and corruption in the distribution of the funds.

4.4.4 VALUE-ADDED EFFECTS (SCENARIO 1, 2 & 3)

Table 10 is a presentation of the value-added changes for scenarios 1, 2 and 3. These results arise from the changes in sectoral outputs and the share of the sectoral value-added amounts. Scenario three ranks as the highest change in GDP from the three scenarios, with an increase of 3.12%. Scenarios one and two show increases of 2.94% and 3.02% respectively. Though these results differ in terms of their level, it is important to note however that they again support the notion that as a policy, the distribution of oil revenue through cash transfers can potentially be economically feasible and beneficial to the economy. As previously discussed, the shock is primarily stimulating the

TABLE 10: VALUE ADDED CHANGES (GDP): NOMINAL VALUE (TRILLION ID) & PERCENTAGES

	INITIAL VALUE	SCENARIO 1		SCENARIO 2		SCENARIO 3	
	(Trillion ID)	Nominal (Trillion ID)	% Δ	Nominal (Trillion ID)	% Δ	Nominal (Trillion ID)	% Δ
Labour Un-Skilled Male	14.34	0.62	4.32%	0.64	4.45%	0.66	4.62%
Labour Un-Skilled Female	0.96	0.06	6.11%	0.06	6.37%	0.06	6.70%
Labour Semi-Skilled Male	24.38	1.06	4.33%	1.08	4.44%	1.11	4.57%
Labour Semi-Skilled Female	0.92	0.04	4.74%	0.04	4.86%	0.05	4.99%
Labour Skilled Male	20.46	0.97	4.74%	0.99	4.86%	1.02	5.00%
Labour Skilled Female	6.64	0.31	4.60%	0.31	4.70%	0.32	4.80%
Capital Agricultural	2.16	0.18	8.34%	0.19	8.83%	0.21	9.53%
Capital Rest	76.79	0.01	0.01%	0.01	0.01%	0.01	0.01%
Capital Oil	59.15	2.55	4.31%	2.61	4.41%	2.67	4.52%
Land	5.49	0.42	7.58%	0.44	7.98%	0.47	8.53%
TOTAL	**211.30**	**6.21**	**2.94%**	**6.38**	**3.02%**	**6.58**	**3.12%**

Source: Authors own calculations

demand in the agricultural sector, as illustrated by the growth in Land and Agricultural Capital across all three scenarios. As discussed earlier, the agricultural sector also has the highest share of active female labour market participation. Therefore, the positive effect on agriculture can also be seen by the increased demand for unskilled Female Labour. It is important to note that demand in the agricultural sector is also vital for employment (and income) for unskilled Labour supply, given that individuals within these unskilled Labour cohorts are likely to be confined to the agricultural sector. The increasing participation of females in the labour market is also supported from a developmental perspective, with respect to improving gender equality but also for Iraq, in terms of challenging some of the negative stigma attached to the societal roles of females in Middle-Eastern cultures.

4.4.5 SECTORAL OUTPUT EFFECTS (SCENARIO 1, 2 & 3)

The merits of each transfer scenario can be further appraised based on the sectorial outputs. Table 11 provides a representation of the sectorial output changes for each scenario, both in nominal (deviations from the initial/base

TABLE 11: SECTORAL OUTPUT CHANGES: NOMINAL VALUE (TRILLION ID) & PERCENTAGES

	INITIAL VALUE	SCENARIO 1		SCENARIO 2		SCENARIO 3	
	(Trillion ID)	Nominal (Trillion ID)	% Δ	Nominal (Trillion ID)	% Δ	Nominal (Trillion ID)	% Δ
Wheat	14.08	0.79	5.59%	0.81	5.78%	0.84	5.97%
Barley	3.47	0.19	5.59%	0.20	5.78%	0.21	5.97%
Paddy	1.82	0.12	6.33%	0.12	6.56%	0.12	6.84%
Maize	2.21	0.12	5.60%	0.13	5.79%	0.13	5.98%
Other Grains	0.18	0.02	10.08%	0.02	10.63%	0.02	11.51%
Tomato	4.19	0.35	8.28%	0.37	8.78%	0.40	9.52%
Other Vegetables	14.96	1.07	7.13%	1.12	7.47%	1.18	7.89%
Fodder Crops	4.34	0.50	11.43%	0.53	12.24%	0.59	13.51%
Legumes	0.12	0.01	11.04%	0.01	11.86%	0.02	12.87%
Industrial Crops	0.53	0.03	5.59%	0.03	5.77%	0.03	5.97%
Sesame	0.25	0.01	5.64%	0.01	5.83%	0.02	6.02%
Other Oil Crops	0.19	0.01	5.58%	0.01	5.77%	0.01	5.96%
Potato	4.37	0.33	7.66%	0.35	8.11%	0.38	8.77%
Other Tubers and Bulbs	0.58	0.05	8.85%	0.05	9.43%	0.06	10.27%
Livestock	12.46	1.42	11.43%	1.52	12.24%	1.68	13.51%
Crude Oil	94.89	0.01	0.01%	0.01	0.01%	0.01	0.01%
Other Mining	8.14	0.44	5.36%	0.45	5.55%	0.47	5.74%
Oil Refining Industry	2.16	0.10	4.63%	0.10	4.66%	0.10	4.76%
Processed Food	40.45	2.26	5.59%	2.34	5.78%	2.41	5.97%
Other Manufacturing Industries	8.23	0.34	4.17%	0.35	4.31%	0.37	4.45%
Electricity and Water	6.53	0.44	6.68%	0.45	6.94%	0.47	7.18%
Construction	27.70	0.06	0.23%	0.06	0.23%	0.07	0.24%
Trade, Hotels and Restaurants	26.68	1.18	4.43%	1.23	4.62%	1.30	4.87%
Transport, Communications and Storage	22.36	1.48	6.63%	1.48	6.62%	1.50	6.71%
Financial Services and Ownership of Dwellings	4.76	0.21	4.40%	0.21	4.44%	0.21	4.45%
Other Services	116.55	4.97	4.27%	5.05	4.33%	5.12	4.39%
TOTAL	**422.20**	**16.52**	**3.91%**	**17.04**	**4.04%**	**17.71**	**4.20%**

Source: Authors own calculations

year values) and percentage terms. Due to the various multipliers, the extent of these deviations varies among all sectors. Sectors with highest gains across all scenarios are livestock, fodder crops, legumes and other grains. The targeted program in scenario three yields the greatest gains across sectors in comparison to the gains of scenario

one and two. This is again attributed to lower-income households spending a greater proportion of additional received, therefore leading to a larger multiplier effect. It is important to note however that the quantiles included under the targeted program account for almost 70% of the total population. The population concentration under the targeted program is likely to be influential in the magnitude of the output changes. An important element to highlight here are the changes in livestock production, specifically in scenario three. Bettencourt *et al.* (2015) finds that in developing countries, livestock species play very important economic and socio-cultural role for wellbeing, particularly for rural-based households. Livestock are multipurpose assets given that they can generate income, are a source of food & means of transport, can contribute to soil fertility, agricultural diversification and sustainable agricultural production. Consequently, as disposable income increases and subsequently more livestock acquired, so they would require more crops to ensure that the livestock are fed and kept healthy. Therefore, consumption patterns would suggest a strong positive relationship between the demands for livestock and fodder crops.

Output changes on food items are encouraging, which would to an extent, allay fears that cash transfers would not be spent on essential food items. In comparison to the PDS, which only makes provision for the distribution of food items, providing cash transfers does however give greater autonomy to citizens to spend on other essential items such as healthcare and education. Measuring output changes on other essential goods and services is made difficult by the design of the SAM which consolidates these under "Other Services". However, there is evidence to suggest that recipients are likely to spend cash transfers on essential goods. Moss & Majerowicz (2013) suggest a tendency for the provision of cash transfers to increase expenditure on health, nutrition, sanitation, and education. There is also evidence of this in the case of Iraq. After 2014 siege of areas in Iraq by *ISIS,* aid organizations such as the Cash Consortium of Iraq (CCI) delivered emergency assistance to 3,335 households in 2015 and 12,759 households in 2016, in the form of cash transfers (CCI, 2017). Data collected during the program evaluation show that households receiving the cash transfers had the highest expenditures on food, shelter/rent and healthcare.

Indeed, during crisis periods, it is not unexpected for there to be little to no expenditure on education, given that supply is likely to be restricted. It would also not be considered as an immediate priority. However, outside of crisis periods, it is expected that education would consume a measure of the cash transfer expenditure. It is important to note that while the above consumption patterns are measured during a crisis period, expenditure on essential items such as food, shelter and healthcare are not exclusive to crisis periods. Outside of crisis periods however, these patterns may change such as increasing/decreasing expenditure of essential items, a measure being allocated to savings or even used as collateral to obtain credit through financial institutions.

There is further evidence to support the notion that cash transfers would not lead to increased consumption on non-essential goods/temptation goods. A World Bank & Stanford University study by Evans & Popova (2017) examined 19 studies with quantitative evidence relating to the impact of cash transfers on the expenditure of temptation goods (alcohol, tobacco etc.), as well as 11 studies which surveyed whether respondents reported they used

transfers to purchase temptation goods. Almost without exception, the studies found either no significant impact or a significant negative impact (where cash transfers led to a reduction in consumption) on temptation goods. Based on these findings, it is plausible to suggest that cash transfers would be used by recipients for essential goods, thereby meeting the policy's economic and socio-economic targets. In addition to this, results from the sectoral output effects also show notable growth on the consumption of utilities (electricity and water), which would reinforce the opinion that cash transfers are likely to drive additional expenditure on essential goods and services.

An interesting result from these simulations is the impact of the shock on the energy and food subsidies. As illustrated in the effects on the Activity and Sales Taxes in appendix C1, C2 & C3 the positive demand shock reflects an increase in demand for these subsidized products. This may support a parallel cash transfer and subsidy program, at least for the short-term (provided it is affordable). This would allow the government to gradually phase out these subsidies, specifically the food subsidies over the medium-to-long term, assuming there is no longer a need for them. There are however important considerations for prices with respect to the removal of subsidies. A study by Anand *et al.* (2013) focusing on energy subsidies, finds that implementing cash transfers along with an immediate removal of subsidies is likely to undermine the welfare effects of the cash transfers. While the results of scenario four suggest welfare gains to the economy when replacing food subsidies with cash transfers, the model does not factor in the potential price increases thereof, which would undermine the welfare gains of the cash transfer. It may therefore be optimal to consider maintaining the food subsidies, however reforming the design, administration and implementation of the program which minimize government's operational responsibilities (i.e. the administrative burdens as earlier discussed) and thereby potentially reducing the expensive logistical costs associated with the subsidies.

Within the current context of Iraq, there are important factors to consider when considering a policy of direct distribution. At the time of writing, Iraq had regained control of all territory previously occupied by *ISIS*. Emancipating these areas from the control of *ISIS* has however come at huge humanitarian and infrastructure costs. As the process of rebuilding begins, there is indeed the need for the restoration of basic infrastructure, as well as re-establishing social services. However, there is strong emphasis here on ensuring that these expenditures are productive and transparent. Moss & Majerowicz (2013) find that large-scale construction is one of the sectors most prone to corruption, with Iraq being no exception to this. In addition to this, Dabla-Norris *et al.* (2011) producing an IMF index on the efficiency of public investment, finds that oil exporters are particularly inefficient with respect to public investment compared to non-oil exporters. Furthermore, Sandbu (2012) suggests that the extent of corruption and wasteful expenditure is likely to be intensified in post-conflict situations, where critical human, organizational and institutional capacity have been fractured (particularly relevant to the current context of Iraq). This link between natural resource wealth and poor institutional quality has been discussed in sections of chapter two and three. Therefore, while it can be argued that revenues need to be spent solely on public investment, they can also be spent more efficiently and transparently through cash transfers.

4.5 MODEL LIMITATIONS

When interpreting the results of these simulations, the limitations of the model must be noted:

Firstly, a strong assumption of the model relates to the absence of any binding constraints i.e. the availability of necessary resources and the fixation of prices. However, being a science of scarce resources, basic economic theory suggests that constraints are likely inevitable in any economy. Therefore, where supply is constrained, the resources required for producing additional quantities of a good can only be made possible by shifting these resources from other parts of the economy i.e. an economy-wide reallocation. Consequently, where these underlying assumptions cannot be met, prudence must be exercised when analyzing the multiplier effects. In addition to this, while multipliers are practical in analyzing real-side effects of quantity-based shocks, they are not appropriate for determining pricing shocks/effects.

Secondly, Supply constraints also have important implications for inflation. The cash transfer to citizens will increase demand for consumer goods (as shown in the model). Where the local economy is not functioning well enough to respond effectively to increased demand, cash transfers could have adverse inflationary effects, potentially stifling or even completely eradicating the benefits of cash transfers. There are however ways to mitigate these effects. Moss & Majerowicz (2013) suggest that Inflationary pressures can be mitigated through careful monetary policy, while supply constraints can be eased by reducing trade barriers (this does however run the risk of reducing the size of the multipliers) as well as government providing additional support to underdeveloped sectors, specifically those expected to experience substantial increases in demand (assuming these sectors are unlikely to meet the demands).

Thirdly, the direct relationship between households and production sectors is not observable in a SAM (Fathurrahman & Soytas, 2015). Income from production sectors to households are indirectly transferred through production factors. Production sectors pay production factors, which in-turn distribute income to household groups. As a consequence of this, it is not possible to explicitly determine the precise household income being derived from a specific production sector.

Fourthly, a profound limitation in the use of SAM's to determine poverty impacts are that the multiplier effects are restricted to measuring the income effects of household groups. The intra-group income distributions are not generated directly. If it is the case that poverty is explicitly detectable within certain socio-economic groups, then these group effects can be informative in this regard (Round, 2003). This is however not the case in the above model. Using the IHSES 2007 & 2012 (the same data source used to determine household incomes, The World Bank (2016) suggests that the 2011 poverty rate for Iraq to have been just under 20%. However, per capita income for the lowest earning household quantile (Rural Quantile 1) indicates earnings that are one and a half times as much as the 2011 global adjusted poverty line of US $1.90 per day. This paradox immediately suggests huge disparities in intra-group income distributions and illustrates the difficulties with respect to quantifying the impacts on poverty.

Lastly, the intervening period between the development of the SAM model and the current environment in Iraq have witnessed significant changes. These include incessant insurgent activity, destruction of oil infrastructure, large-scale internal displacement and a high degree of volatility in the oil price. Given that the SAM is not reflective of these factors, and without knowing how they may influence the model, the results could misrepresent the potential impact of the policy. It can however be argued that these factors may not necessarily be as influential on the potential outcomes of the policy. In the case of insurrection, while remnants of these insurgent activities remain, it has for the most part been nullified by large-scale security operations. Furthermore, literature suggests that direct distribution can also be used as a tool to counter the prevalence of insurgent activity. This is supported by Sandbu (2012), who finds that direct distribution (of resource revenues) in conflict-ridden regions can contribute positively towards a peacebuilding process. Also, Berman et al. (2011) who studied counterinsurgency measures in Iraq and found that poverty and unemployment are often drivers of civilians joining or supporting insurgent activities. Their model results found that greater efficiency in the spending of government revenues (through direct distribution, improvements in the provision of services etc.) reduces the incidence of insurgent violence/activity.

In respect of oil infrastructure, while there was a measure of destruction, evidence suggests no disruption to the overall level of production. As illustrated in Figure 4 (Chapter 2), the level of production had in fact increased significantly between 2013 & 2016, the period during which oil infrastructure had suffered the most damage, as a consequence of the military action required to liberate areas occupied by ISIS and other insurgent groups. Production has since exceeded 4 million barrels per day and continues to grow steadily with the development of new oil fields. In addition to production, volatility in the global oil price has also raised significant concern, particularly during 2016 where the crude oil price at one point fell as low as US $27.67 a barrel (OPEC, 2016). However, the movement of the price began to stabilize and rose significantly between 2017 & 2018, with the 2018 price currently averaging almost US $70 a barrel (OPEC, 2018). The current oil price also bodes particularly well for Iraq, considering that the forecasted oil revenue for the 2018 Iraqi budget was at an assumed oil price of US $46 a barrel. Therefore, the revenue accrued has been significantly higher than forecasted. Also, the use of Stabilization Funds provides an option for Iraq to mitigate some of the negative effects associated with these price fluctuations.

Finally, Internally Displaced Persons (IDP's) in Iraq has been a chronic problem since the 2003 US-led invasion and further exacerbated by persistent insurgent activity, particularly the 2014 ISIS insurgency. However, improvements in the security situation in many areas has enabled IDP's to return to their homes (Benton et al., 2018). The UN IOM reported that approximately 3.2 million IDP's had returned home at the end of 2017 (UN, 2018). The concern however is that the conditions to which IDP's return to are often precarious. In this regard, direct distribution may also the serve to provide a means for returning persons to access essential goods and services as they face significant challenges in the rebuilding process. If, however the prospect of these factors undermining the outcomes of the policy still exist, it may then be best suited to only consider the implementation of the policy at a time when there is a greater degree of political and economic stability.

CHAPTER 5

5.1 CONCLUSION

This dissertation proposed the use of oil revenue distribution as a policy to counter the high levels of corruption in Iraq and studied the economic effects of this policy using SAM-based multiplier analysis. For the better part of its existence, Iraq has been considerably wealthy but also recurrently dysfunctional. High levels of corruption, state-funded patronage networks, weak governance and poor institutional quality have undermined the sovereignty of the country's vast petroleum wealth. Iraq has also had a consistent measure of mismanagement with respect to its oil industry, with foreign oil companies and corrupt political factions often exploiting the countries oil resources for private gain. Conflicts, both internal and external have also had a negative impact on the oil industry, both on its physical operations as well as on the government's ability to build stronger institutions. Since the 2003 invasion, Iraq has been more structured in the management of the oil industry, specifically the relationships with foreign companies. While the governance and management of the oil industry is crucial, the biggest challenge yet remains how to eradicate the high levels of corruption and patronage networks present within government structures.

For the better part of the last century, ruling governments in Iraq have exploited the country's vast oil wealth for self-enrichment and the consolidation of power. Under the Saddam Hussain regime, Iraq's vast oil revenues were used to significantly improve social and economic welfare in the country. However, at the same time, it also encouraged high levels of corruption, practices of patronage and funded destructive conflicts with both Iran and Kuwait. The optimism of a prosperous post-democratic Iraq has rapidly faded with regular outbreaks of ethno-sectarian conflict, large-scale insurgency movements and a continuation of corrupt practices at a state level. With general elections set for 2018, the new leadership in Iraq faces a colossal task in rebuilding areas destroyed by recent conflicts, as well as correcting a legacy of wealth imbalances by forming policies which grant civil society greater benefit from the country's vast natural resource wealth.

While it does have its critiques, there is little doubt that as a policy, direct distribution is supported both theoretically and in certain cases empirically. Many of the past literature works suggest that the policy not only has a positive economic effect but can also contribute significantly to easing other social and politically orientated tensions. The importance of the theoretical model presented is such that it is particularly relevant to real world scenarios. The model suggests that in cases where countries do not allocate the investment of public goods efficiently, the returns when allocating state funds to direct transfers are greater. These returns are amplified when public institutions are weaker and/or there are high poverty headcounts, which incidentally is the case in Iraq. The reviews of past experiences with the implementation of this policy suggest a mixture of success and failures. It is important to note however that the case of failure is attributed to design, planning and implementation flaws, rather than the impacts of policy itself.

A SAM analysis was used to model the effects of a policy of direct distribution of oil revenues on the Iraqi economy. The analysis tested four scenarios under which direct distribution could be applied to the economy with variations in the design of the policy including a universal transfer program, targeted transfer program and replacement of the existing food subsidy system with oil revenue-funded cash transfers. Overall, the results illustrate that the policy has the potential to yield substantial positive effects to the economy. In each of the model scenario's, household incomes are increased for all quantiles, particularly for lower income households. Targeted transfers programs, which are strongly redistributive in nature, do however yield larger effects to household incomes than universal programs. For lower-income households these occur directly through the distribution of the transfer, while for higher-income households the indirect/induced effects are larger in the targeted programs. It is plausible that higher-income households are owners of factors of production and thus acquire additional income from increased consumption/expenditure in the economy.

The income effects of the cash transfer show a strong demand stimulus towards expenditure on agriculturally produced goods, as manifested by the growth in demand for female unskilled & semi-skilled labour (which are mostly active in the agricultural sector), as well as the demand on agricultural capital and land. The increase in expenditure on agricultural produce is also illustrated by the changes in sectorial outputs. The increase in the consumption of livestock is the highest among all sectorial outputs, closely followed by fodder crops and legumes, both of which are complementary products for livestock. As noted earlier in the study, livestock exist not only as an individual product but are also multipurpose in terms of being a source of food, transport and agricultural traction, to name a few. These results on the changes in consumption, supported by real-word examples of cash transfer case studies alley fears that additional income may be spent on non-essential/temptation goods. Rather it is more likely for additional income to be spent on essential goods and services, which in-turn will contribute positively towards stimulating the economy.

5.2 SCOPE FOR FURTHER RESEARCH

To the best of my knowledge, this is the first paper which uses a SAM to model economy-wide effects of direct distribution/cash transfers in Iraq. As noted earlier in the study, the design of the SAM being used limits the ability to ascertain what the effects of the policy could have on expenditure patterns for other essential goods and services such as healthcare and education, both of which have been included here under consolidated account for "Other Services". The addition of these as stand-alone accounts would provide greater insight into changes in their consumption patterns and their subsequent contribution towards the advancement of developmental indicators in the country. A key limitation of the SAM model is the inability to capture the intra-group income distributions, thereby hindering the ability to accurately quantify the impact of cash transfers on poverty. It would therefore be useful to employ additional methods of poverty analysis to more accurately determine the extent to which cash transfers can alleviate poverty.

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APPENDIX A: SOCIAL ACCOUNTING MATRIX

	Activities	Commodities	Labour	Capital and Land	Households	Government	Activity Tax	Sales Tax	Import Tax	Direct tax	Saving-Investment	Rest of the World
Activities		Supply Matrix										
Commodities					Final private consumption	Final Public Consumption					Investment	Exports
Labour	Labour Value at factor cost											
Capital and Land	Capital and land value at factor cost											
Households			Payments from labour to households	Payments from capital and land to household		Transfers from government to households						Remittance to households
Government				Payments from capital and land to government			Activity tax	Sales tax	Tariff	Direct tax		
Activity Tax	Activity Tax											
Sales Tax		Sales Tax										
Imports Tax		Tariffs										
Direct Tax					Direct taxes on household saving							
Saving-Investment						Government saving						Foreign saving
Rest of the World		Imports		Payments from capital and land to non-residents		Net payment from government to non-residents						

Source: Debowicz (2016)

APPENDIX B: IRAQ SAM SET DESCRIPTIONS

A_WHEAT	Wheat	C_MININGO	Other Mining
A_BARLEY	Barley	C_OILREFIN	Oil Refining Industry
A_PADDY	Paddy	C_FOODP	Processed food
A_MAIZE	Maize	C_MANUFO	Other Manufacturing Industries
A_GRAINO	Other grains	C_ELECWAT	Electricity And Water
A_TOMATO	Tomato	C_CONSTRUC	Construction
A_VEGETO	Other vegetables	C_TRADE	Trade, Hotels And Restaurants
A_FODDER	Fodder crops	C_TRANSP	Transport , Communications And Storage
A_LEGUMES	Legumes	C_BANK	Financial Services And Ownership Of Dwellings
A_CROPIND	Industrial crops	C_SERVO	Other Services
A_SESAME	Sesame	F_LUM	Labour unskilled male
A_OILCROPO	Other oil crops	F_LUF	Labour unskilled female
A_POTATO	Potato	F_LMM	Labour semiskilled male
A_TUBBULB	Other tubers and bulbs	F_LMF	Labour semiskilled female
A_LVST	Livestock	F_LSM	Labour skilled male
A_CRUDE	Crude Oil	F_LSF	Labour skilled female
A_MININGO	Other Mining	F_KA	Capital agricultural
A_OILREFIN	Oil Refining Industry	F_KAN	Capital rest
A_FOODP	Processed food	F_KO	Capital oil
A_MANUFO	Other Manufacturing Industries	F_N	Land
A_ELECWAT	Electricity And Water	H_R0	Rural Female-Headed Households
A_CONSTRUC	Construction	H_R1	Rural Quantile 1 Households
A_TRADE	Trade, Hotels And Restaurants	H_R2	Rural Quantile 2 Households
A_TRANSP	Transport , Communications And Storage	H_R3	Rural Quantile 3 Households
A_BANK	Financial Services And Ownership Of Dwellings	H_R4	Rural Quantile 4 Households
A_SERVO	Other Services	H_R5	Rural Quantile 5 Households
C_WHEAT	Wheat	H_U0	Urban Female-Headed Households
C_BARLEY	Barley	H_U1	Urban Quantile 1 Households
C_PADDY	Paddy	H_U2	Urban Quantile 2 Households
C_MAIZE	Maize	H_U3	Urban Quantile 3 Households
C_GRAINO	Other grains	H_U4	Urban Quantile 4 Households
C_TOMATO	Tomato	H_U5	Urban Quantile 5 Households
C_VEGETO	Other vegetables	TRC	Transaction costs
C_FODDER	Fodder crops	GOV	Government
C_LEGUMES	Legumes	ATAX	Activity taxes
C_CROPIND	Industrial crops	DTAX	Direct taxes
C_SESAME	Sesame	MTAX	Import taxes
C_OILCROPO	Other oil crops	STAX	Sales taxes
C_POTATO	Potato	DSTK	Changes in stock
C_TUBBULB	Other tubers and bulbs	S-I	Saving-Investment
C_LVST	Livestock	ROW	Rest of the World
C_CRUDE	Crude Oil	TOTAL	Total

APPENDIX C1: SCENARIO 1 - DISAGGREGATED IMPACTS FOR OUTPUT, GDP AND INCOME

A_WHEAT	0.7871	C_CRUDE	0.0079
A_BARLEY	0.1937	C_MININGO	0.4386
A_PADDY	0.1154	C_OILREFIN	0.2175
A_MAIZE	0.1235	C_FOODP	2.4618
A_GRAINO	0.0181	C_MANUFO	2.0510
A_TOMATO	0.3472	C_ELECWAT	0.4424
A_VEGETO	1.0659	C_CONSTRUC	0.0647
A_FODDER	0.4962	C_TRADE	1.1813
A_LEGUMES	0.0136	C_TRANSP	1.4830
A_CROPIND	0.0294	C_BANK	0.2094
A_SESAME	0.0144	C_SERVO	4.9725
A_OILCROPO	0.0107	F_LUM	0.6198
A_POTATO	0.3348	F_LUF	0.0585
A_TUBBULB	0.0510	F_LMM	1.0560
A_LVST	1.4234	F_LMF	0.0438
A_CRUDE	0.0079	F_LSM	0.9703
A_MININGO	0.4363	F_LSF	0.3059
A_OILREFIN	0.1000	F_KA	0.1802
A_FOODP	2.2616	F_KO	0.0064
A_MANUFO	0.3432	F_KAN	2.5514
A_ELECWAT	0.4361	F_N	0.4160
A_CONSTRUC	0.0637	H_R0	0.2087
A_TRADE	1.1812	H_R1	1.2501
A_TRANSP	1.4830	H_R2	0.6726
A_BANK	0.2094	H_R3	0.5085
A_SERVO	4.9725	H_R4	0.3746
C_WHEAT	0.8936	H_R5	0.2436
C_BARLEY	0.1938	H_U0	0.9654
C_PADDY	0.1809	H_U1	1.1668
C_MAIZE	0.1240	H_U2	1.4673
C_GRAINO	0.0482	H_U3	1.7662
C_TOMATO	0.3472	H_U4	1.9091
C_VEGETO	1.2395	H_U5	2.7876
C_FODDER	0.5329	GOV	0.1642
C_LEGUMES	0.0136	ATAX	-0.1997
C_CROPIND	0.0294	DTAX	0.5312
C_SESAME	0.0144	MTAX	0.2070
C_OILCROPO	0.0604	STAX	-0.3808
C_POTATO	0.3348	S-I	-3.1115
C_TUBBULB	0.0894	ROW	2.9473
C_LVST	1.6422		

APPENDIX C2: SCENARIO 2 - DISAGGREGATED IMPACTS FOR OUTPUT, GDP AND INCOME

A_WHEAT	0.8135	C_CRUDE	0.0080
A_BARLEY	0.2002	C_MININGO	0.4540
A_PADDY	0.1196	C_OILREFIN	0.2192
A_MAIZE	0.1276	C_FOODP	2.5445
A_GRAINO	0.0191	C_MANUFO	2.1191
A_TOMATO	0.3681	C_ELECWAT	0.4598
A_VEGETO	1.1167	C_CONSTRUC	0.0659
A_FODDER	0.5315	C_TRADE	1.2325
A_LEGUMES	0.0146	C_TRANSP	1.4792
A_CROPIND	0.0304	C_BANK	0.2115
A_SESAME	0.0149	C_SERVO	5.0500
A_OILCROPO	0.0111	F_LUM	0.6387
A_POTATO	0.3544	F_LUF	0.0610
A_TUBBULB	0.0543	F_LMM	1.0825
A_LVST	1.5246	F_LMF	0.0449
A_CRUDE	0.0080	F_LSM	0.9949
A_MININGO	0.4516	F_LSF	0.3123
A_OILREFIN	0.1008	F_KA	0.1907
A_FOODP	2.3376	F_KO	0.0065
A_MANUFO	0.3546	F_KAN	2.6068
A_ELECWAT	0.4533	F_N	0.4380
A_CONSTRUC	0.0648	H_R0	0.2304
A_TRADE	1.2325	H_R1	1.3887
A_TRANSP	1.4792	H_R2	0.7423
A_BANK	0.2115	H_R3	0.5578
A_SERVO	5.0500	H_R4	0.4077
C_WHEAT	0.9236	H_R5	0.1550
C_BARLEY	0.2004	H_U0	1.0506
C_PADDY	0.1875	H_U1	1.2915
C_MAIZE	0.1282	H_U2	1.6152
C_GRAINO	0.0509	H_U3	1.9242
C_TOMATO	0.3681	H_U4	2.0593
C_VEGETO	1.2986	H_U5	2.0654
C_FODDER	0.5708	GOV	0.0065
C_LEGUMES	0.0146	ATAX	-0.2074
C_CROPIND	0.0304	DTAX	0.4964
C_SESAME	0.0149	MTAX	0.2158
C_OILCROPO	0.0625	STAX	-0.3936
C_POTATO	0.3544	S-I	-3.1723
C_TUBBULB	0.0953	ROW	3.0546
C_LVST	1.7590		

APPENDIX C3: SCENARIO 3 - DISAGGREGATED IMPACTS FOR OUTPUT, GDP AND INCOME

A_WHEAT	0.8404	C_CRUDE	0.0082
A_BARLEY	0.2069	C_MININGO	0.4703
A_PADDY	0.1247	C_OILREFIN	0.2237
A_MAIZE	0.1319	C_FOODP	2.6287
A_GRAINO	0.0207	C_MANUFO	2.1872
A_TOMATO	0.3994	C_ELECWAT	0.4760
A_VEGETO	1.1803	C_CONSTRUC	0.0670
A_FODDER	0.5866	C_TRADE	1.3005
A_LEGUMES	0.0158	C_TRANSP	1.4993
A_CROPIND	0.0314	C_BANK	0.2118
A_SESAME	0.0154	C_SERVO	5.1166
A_OILCROPO	0.0114	F_LUM	0.6621
A_POTATO	0.3833	F_LUF	0.0642
A_TUBBULB	0.0592	F_LMM	1.1142
A_LVST	1.6827	F_LMF	0.0461
A_CRUDE	0.0082	F_LSM	1.0225
A_MININGO	0.4679	F_LSF	0.3190
A_OILREFIN	0.1028	F_KA	0.2058
A_FOODP	2.4149	F_KO	0.0066
A_MANUFO	0.3660	F_KAN	2.6738
A_ELECWAT	0.4693	F_N	0.4683
A_CONSTRUC	0.0659	H_R0	0.2900
A_TRADE	1.3005	H_R1	1.7724
A_TRANSP	1.4993	H_R2	0.9321
A_BANK	0.2118	H_R3	0.6896
A_SERVO	5.1166	H_R4	0.2041
C_WHEAT	0.9542	H_R5	0.1615
C_BARLEY	0.2070	H_U0	0.4512
C_PADDY	0.1955	H_U1	1.6407
C_MAIZE	0.1324	H_U2	2.0253
C_GRAINO	0.0551	H_U3	2.3520
C_TOMATO	0.3994	H_U4	1.0494
C_VEGETO	1.3725	H_U5	2.1257
C_FODDER	0.6299	GOV	0.0753
C_LEGUMES	0.0158	ATAX	-0.2147
C_CROPIND	0.0314	DTAX	0.4631
C_SESAME	0.0154	MTAX	0.2269
C_OILCROPO	0.0645	STAX	-0.4066
C_POTATO	0.3833	S-I	-3.2519
C_TUBBULB	0.1038	ROW	3.1766
C_LVST	1.9413		