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Oil Revenue Management for Economic Diversification

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ABBREVIATIONS AND ACRONYMS

CEM	Country Economic Memorandum	MDG	Millennium Development Goal
DFI	Development Fund for Iraq	MBD	Million Barrels per Day
EITI	Extractive Industries Transparency Initiative	PER	Public Expenditure Review
GCC	Gulf Cooperation Council	PFM	Public Financial Management
GDP	Gross Domestic Product	PIM	Public Investment Management
ICA	Investment Climate Assessment	PPP	Public Private Partnership
IMF	International Monetary Fund	SME	Small and Medium Enterprises
INES	Integrated National Energy Strategy	SOE	State-Owned Enterprise
IOC	International Oil Companies	UAE	United Arab Emirates
KDP	Kecamatan Development Program	USA	United States of America
KRG	Kurdish Regional Government	USSR	Union of Soviet Socialist Republics
LNG	Liquefied Natural Gas	WTO	World Trade Organization

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Republic of Iraq

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Executive Summary

i. This report – the first phase of a programmatic Iraq Country Economic Memorandum (CEM) – is structured around the themes of revenue management and economic diversification. These themes accord with the economic challenges faced by Iraq in the medium term but contrast with the short-termism of current Iraqi decision making, which is pushing for a rapid ramp-up of oil production – reducing diversification – to finance a large up-front spending program which is detached from a vision of how to diversify the economy.

ii. Iraq’s oil revenue boom will not be able to meet the expectations placed upon it without a range of supporting policies. First, government spending provides only one instrument whereas the government faces multiple objectives: job creation, diversification, service delivery, making provision for the future, and so on. Second, the oil revenue boom is fragile. Policymakers should be asking now whether the system can cope with a sudden decline in oil prices, or a trend of stagnant or even declining oil prices – prospects that cannot be ruled out given global energy market developments. International experience indicates the need to have policies in place before such eventualities occur; the after-the-fact verdict on decisions taken in crisis mode will otherwise be harsh. Finally, Iraq’s investment strategy is not the same as the government’s investment strategy. The private sector will need to be enabled in its own investment plans for the benefit of the country as a whole.

iii. Iraq should aim towards adapting its economy to strong weight of oil, as opposed to complete insulation of the non-oil economy from it or dependence on it. The oil revenue flow is so large by any standard that the non-oil economy is bound to be affected. Fiscal policy alone cannot handle the challenge of smoothing. Instead, a flexible non-oil economy is needed: a financial sector that can provide an additional source of funds for investment and shock absorber, a labor market with mechanisms and institutions that promote sustainable job creation, and an investment climate that makes the necessary space for the private sector.

iv. To address the myriad links between Iraq’s economic challenges, the report takes a sequential approach to the analysis. Chapter 1 presents an overview of the fiscal aspects of prospective developments in the energy sector, and an outline of major obstacles to growth in the non-oil economy. Then in Chapter 2, a relatively high-level and abstract economic model is developed to study the impact of various options for spending the oil revenue windfall on the non-oil economy. Finally in Chapter 3 the opportunities for the development of the non-oil economy are set out in more detail along with recommended next steps in the World Bank support to the government of Iraq.

v. The report’s findings and recommendations give some clear directions, but are unavoidably imprecise on certain aspects. There is huge uncertainty about the baseline forecasts for Iraq’s oil and gas production and global energy market prospects. There is the broader domestic and regional political uncertainty which will have major implications for Iraq’s development path. Finally, Iraq has a daunting legacy of war, isolation, and heavy state intervention to overcome, with the result that standard benchmarks for growth or convergence have little immediate relevance.

vi. Oil and gas development will only be seen as a national success if it is accompanied by convergence of the overall economy to one capable of providing productive opportunities for all. For Iraq, the task is not just to converge with other rapidly developing middle income countries, but to catch up from its legacy of progress interrupted and then reversed by dictatorship, war, and isolation. Thus, the stakes are high: oil and gas can enable convergence and catch-up, but it is an opportunity with a short window of time to have its maximum impact. In five years from now, oil market prospects could have changed for the worse or the economy could already be locked in on an inferior path as a result of decisions made today.

vii. ***Oil revenue management is an integral part of energy sector development.*** First and foremost, energy sector expansions plans depend on substantial investments by the government for their realization, which in turn must be funded by revenue flows. In fact, the desire to generate cash flow had imparted a very front-loaded profile to oil sector investment and production projections, which would have significantly tested project management capacity and long-term production trends in the sector. There are recent indications that the government is leaning towards a production-investment profile which would provide a smoother flow of revenue over a longer period of time, and give more space for absorption capacity to develop.

viii. ***Revenue management is equally central to diversification prospects.*** If not managed well, revenue volatility will be transmitted to spending volatility, leading to a stop-start cycle in the non-oil sector. Volatility also manifests itself through fluctuations in inflation and relative prices, the real exchange rate, and the demand outlook for the private sector. For various reasons, capital spending tends to bear the brunt of abrupt adjustments in spending, despite its importance to the long-term development strategy of the country.

ix. ***Because they are already developing at different speeds and in response to different forces, the non-oil sector risks being overwhelmed by the oil sector.*** The non-oil sector is growing at about half the pace of the oil sector, and from a much smaller base. The non-oil sector is much less integrated with the government and external sectors than oil, and is not in a position to withstand the side-effects of oil sector development with respect to incentives, absorption capacity, rent-seeking, and so on. Iraq risks a situation found in other developing oil exports where the formal sector of the economy consists just of oil and the public sector, as the negative effects of oil force all other activity into the informal economy. This would have severe implications for the quality of jobs.

x. ***However, the choices made for oil revenue can affect this dynamic, as the model developed for the report will show.*** Although technical, the model's features are designed to capture essential features of Iraq's economy: oil revenue is arriving into an economic structure dominated by a large public sector, a small traded goods sector, and an informal sector that employs a lot of people, but at low wages. Given other constraints in the economy, the government will be the main financier of domestic investment in the short-term. Current spending needs are urgent, but it is still important to ensure that there is a sustainable basis for consumption in the future decades. The model can, albeit at an abstract level, capture these considerations.

xi. ***The economic model is framed around four well-defined options for the use of Iraq's oil revenues: public sector pay and numbers, public capital, transfers, or foreign saving.*** These correspond to elements of the economic structure of other resource rich countries: resource wealth distribution through jobs, a developmental state, a welfare state, and a rentier state. However, the impact of domestic investment in public capital is constrained by adjustment costs, which reflects Iraq's serious deficiencies in public investment management.

xii. ***The economic model captures several Dutch Disease and crowding out mechanisms operating between different segments of product and labor markets in the economy.*** In particular, the model can track changes in wages, relative prices, employment, consumption, non-oil output, and trade. The four options result in major differences in outcomes for these variables. The underlying dynamic in the model is the tradeoff between consumption and investment and the sector impacts thereof.

xiii. ***Allocating all oil revenues to public capital produces the strongest impact on non-oil GDP, but not on consumption.*** Thus the broader benefits of diversification in terms of employment and additional revenue sources would follow from this option. However, this option incurs adjustment costs, which blunt its impact in the early stages. By contrast, allocating revenues to public sector pay and numbers essentially eliminates the economy's traded good sector. Wages rise sharply, which mitigates any beneficial impact of government spending on the real economy. Most consumption

needs are met by imports (which are high cost due to logistical deficiencies), and because there is no accumulation of capital or foreign assets, the economy is completely oil-dependent. And as a practical matter, Iraq cannot create enough jobs for its population through this approach.

xiv. ***Allocating oil revenues to transfers or foreign saving achieves relatively good outcomes for consumption, but does nothing to transform the economy.*** In particular, the absence of any capital accumulation coupled with physical depreciation leaves the economy increasingly dependent on imports. Only the foreign saving option is making some provision for financing consumption after the revenue windfall is gone. However, consumption is low in the near-term under this strategy as only a modest level of sustainable consumption can be managed until significant asset accumulation has taken place.

xv. ***Each of the four options thus comes with problems.*** Allocating revenues to public capital or foreign wealth will ensure the most sustainable consumption flow, but both require patience in terms of ability to deliver near-term consumption. Only the former option diversifies the economy. Allocations to jobs or transfers provide a sharper boost to near-term consumption, but tilt the economy towards strong import dependence and similarly skew its labor market structure. The domestic private sector (as proxied by the traded goods sector) is severely squeezed in these scenarios.

xvi. ***The recommended scenario emerging from the model is one where the adjustment costs of investing in public capital are eased by use of an overseas transitional saving or “parking” fund.*** Some revenues are initially set aside in this fund while the public capital stock is slowly increased. When the capital stock is higher (with the implicit assumption that this will have been accompanied by improvements in public investment management), investment can increase. The fund also provides an additional source for consumption. For this strategy to make sense, the implementation of substantive improvements to the public expenditure management system is critical.

xvii. ***The findings of Chapter 2 should be considered in terms of broad economic rather than budgetary strategy.*** While elucidating important sector impacts of revenue allocation on household welfare and in product and labor markets, they do not prescribe a specific recurrent-capital spending mix or a fiscal rule or a year-by-year path for public investment. The report is cautious on the question of a fiscal rule: oil exporters with more developed institutions than Iraq have had great difficulty in designing and implementing fiscal rules and flexibility is needed to respond to a rapidly changing structural environment. Assistance with spending implementation and targeted analytical tools to improve medium-term fiscal planning are likely to be more effective.

xviii. ***Chapter 3 looks in more detail at the enabling environment and complementary policies needed to validate Chapter 2’s emphasis on public capital as the instrument of growth for the non-oil economy.*** Substantial obstacles will have to be surmounted for Iraq’s non-oil sector to thrive, so many obstacles that the list can seem forbidding. The common thread in the diagnosis is that the Iraqi state has a completely misaligned role in the economy; it struggles to provide essential services like law and order and electricity and water, but has an enormous administrative and operational footprint in private sector development.

xix. ***The economy’s current trajectory resembles the jobs and transfers scenarios outlined in Chapter 2:*** high growth in public sector numbers, wages, and spending on subsidy programs, but a private sector that is being crowded out not just by the aforementioned mechanisms but also a chronically weak business environment and a financial sector that is failing to play any developmental role in the economy; these problems are richly documented in the recent Public Expenditure Review (PER) and Investment Climate Assessment (ICA). There is a high risk of a boom-bust cycle in the public finances and since the government’s spending is the major driver of non-oil growth, the private sector is very exposed. The state-owned enterprise (SOE) sector has clogged the functioning of product and factor markets, and the formal private sector is squeezed between entrenched SOEs on the one hand and the informal sector on the other.

xx. ***Iraq's potential for diversification is well-known in broad terms but can easily be overstated.*** Although it is true that the country has a legacy as a center of education and culture, there is a significant problem of illiteracy especially among women: the broad improvement in access to education that was a feature of most MENA countries over the last 40 years was less effective in Iraq and many of the previous gains were dissipated by brain drain. Agriculture (which is discussed in a companion note to the report) has some intrinsic advantages but will need an enormous investment program to offset decades of environmental damage. Furthermore, it has no potential on its own as a large-scale job creator.

xxi. ***Although sometimes seen as part of diversification, moving downstream within the energy sector is a viable option for Iraq, as ongoing work on the Integrated National Energy Strategy has shown.*** However, empirical analysis indicates that the capabilities required for this are substantial. Regarding petrochemicals, it has taken Saudi Arabia decades of careful planning to establish a presence in the higher value-added segments of this sector and other oil producers seen as success stories have only small petrochemical sectors. Instead the sector's prospects are closely linked to market development of users of its products, such as manufacturing or agriculture, meaning that it is not a sector that can be targeted for growth on its own. And whereas the promotion of heavy industry is a temptation to provide heavily subsidized natural gas, it may be technically simpler and more lucrative for Iraq to focus on gas for power or export rather than going straight to an (over-) ambitious industrial base around it.

xxii. ***Tourism presents an interesting case study of a sector that is making progress despite many obstacles.*** Of course it needs to be acknowledged that the sector cannot be a major national employment driver on its own, or that it will necessarily generate jobs that Iraqis want since the opportunities may be seasonal or seen as lacking prestige. But working from the intrinsic attraction of pilgrimage sites, the sector has been able to capitalize on the nature of tourism as a locally delivered service, which allows it to work in a somewhat decentralized way outside the administrative weight of Baghdad. Because it is linked to real estate, the financing options are also somewhat more flexible than those facing industrial or service-oriented small and medium enterprises.

xxiii. ***Iraq will have difficulty achieving any momentum in productivity growth without expansion in market size,*** and for this, better global and regional integration is essential. But the track record of integration efforts is very poor. Iraq is not a World Trade Organization (WTO) member, and Arab integration has been hobbled by geopolitics, national rivalries, and a statist inward orientation.

xxiv. ***The entry point for reforms springs from the diagnosis concerning the role of the state. Regarding state capacity, there are a variety of issues regarding security and utilities such as electricity and water.*** In the security sector, a major concern is that short-term solutions such as militias and ubiquitous check-points are fragmenting the country and lack an exit strategy. Indeed, these apparent solutions may undermine social cohesion rather than enhance it. There is by now considerable Bank experience with approaches to establishing (or re-establishing) social cohesion and basic services in conflict-affected and fragile environments. However it is worth noting that three well known cases – Indonesia KDP and local government support in Bangladesh and Sri Lanka – arguably represented cases of *strong* central governments seeking a direct channel to local communities. Whether Iraq's central government has this type of capacity is unclear.

xxv. ***The private sector needs to be seen as an integral player in Iraq's development.*** Its potential contributions are manifold. First, private sector capacity can be leveraged to relieve pressure on the public sector's project management capacity. In practical terms, this means moving forward with the use of Public-Private Partnerships, an area in which there is substantial experience in Arab countries let alone the rest of the world. Second, strengthened private sector participation can further allow the state to focus on its regulatory and public service function; as things stand now, the pursuit of too many functions is leading to dilution of effectiveness in all of them. Third, investment opportunities

are already present in the construction, banking, industry, and tourism sectors, and the private sector has the discipline and incentives to take advantage of them if the right enablers are present. These opportunities would if realized provide substantial sources of job creation.

xxvi. ***The needed role of the private sector provides another entry point for the governance agenda.*** Senior Iraqi policymakers are aware of the challenges posed by corruption and maladministration. This thinking should be enlarged to include the impact of governance shortfalls on diversification: if effort and resources are being pulled into distortions caused by deficient procurement, arbitrary decision-making, and excess procedures for commercial transactions, they are being directed away from job creation and productive investment.

xxvii. ***Fiscal management should work to build the credibility of existing fiscal institutions while recognizing capacity constraints.*** In particular, Iraq should avoid an over-ambitious move to a full-fledged fiscal rule. International experience shows the enormous difficulties that oil exporters with more developed institutions than Iraq have had in designing and implementing binding annual targets for deficits or debt linked to medium-term revenue projections. The notion of a rigid fiscal rule binding government in a situation of such large structural change, superimposed on oil volatility, is unrealistic. Governments will need flexibility to respond to unfolding and unpredictable events in an appropriate manner – within the framework of strengthened existing systems. This suggests a focus on key functions of fiscal policy formulation and implementation: a medium-term fiscal framework, a debt management strategy, and of course a strong PFM system.

xxviii. ***The successful management of the Development Fund for Iraq (DFI) and the Extractive Industries Transparency Initiative (EITI) should be built upon.*** Given the multiple challenges faced by Iraq, its achievements in promoting revenue transparency under self-management of the DFI and compliance with the EITI for 2010 are commendable. Two recommendations flow from this. First, Iraq has shown that it has the building blocks of a savings fund, although the DFI is not intended to serve this purpose. Thus, a transitional development-oriented savings fund is not an unrelated leap from current capacity. Second, the high transparency on revenues needs to extend to expenditures, which is where the parallel agenda arising from the Public Expenditure Review and the Public Financial Management project comes in.

xxix. ***The macroeconomic implications of the investment surge linked to oil output should be incorporated in overall economic management.*** As is already the case, the local construction and ancillary sectors are under severe pressure, and bottlenecks and price increases are inevitable. Iraq is in a situation where investment plans to expand hydrocarbon capacity co-exist with an expansionary non-oil fiscal policy, which risks inflationary pressures and loss of competitiveness. This will damage diversification prospects.

xxx. ***Conditions to ensure beneficial spillovers of technology, capacity, and market development from the oil and gas industry require urgent attention.*** Three issues stand out. First, the skills shortages that inhibit the development of local supply chains and downstream industry could be addressed in terms of specific partnership strategies between companies and relevant tertiary level education institutions. Second, given the challenging circumstances in terms of business climate and access to finance, land, and adequate infrastructure, special “diversification clusters” might be considered for firms related to the oil sector. Third, local content requirements may – with the proviso of careful design – have a role in Iraq. This need not be enshrined in legislation but could be one consideration in hydrocarbon bidding rounds, field development plans, and the corporate tax system (e.g. deductibility of certain expenses).

xxxi. ***To design appropriate jobs policies for skills upgrading and capacity building, a good point of departure would be a joint government-industry analysis of supply and demand of key skills needed.*** The objective would be to chart skills gaps and deficits for domestic participation in oil exploration and extraction, and the skills deficits holding back the emergence of local supply chains

related to the oil sector. Capacity building would need to address gaps in tertiary level education, as well as firm-level technology transfer.

xxxii. The state's role energy sector coordination gives it an entry point for pursuing diversification and cluster development. Whereas it may not be in the interest of a single company to develop local supply chains, it may be so for the sector as a whole, and there is hence a coordinating role for the state. Assuming technology spillovers from technically upgraded domestic oil and related sectors, there would be justification for providing temporary special regulatory and financial regimes in “diversification clusters”, allowing technology firms related to the oil sector to develop in a business climate more favorable than that of the nation as a whole. But building local content capabilities takes time and requires significant initial investment in human resources and firm capacity development. During the development of Norwegian off shore oil fields in the 1970s, the government deliberately slowed down the speed of concessioning to let Norwegian industry catch up with the technology requirements in the oil sector. A similar principle may be relevant to the phasing of oil and gas production plans under INES.

xxxiii. Three pillars to promote diversification are therefore recommended: private sector development, integration of non-oil public spending with diversification objectives, and strengthened linkages of the wider economy to the energy sector. These pillars clearly cut across many areas of government policy (let alone World Bank engagement) and a high-level coordinating role for top policymakers will be needed. Although the exact institutional mechanisms are a matter for the Iraqi government, relevant outputs of the government include the National Development Plan, the Poverty Reduction Strategy, the Integrated National Energy Strategy, and the Medium-Term Budget Strategy. This provides a first cut at the players who would need to be at the table.

xxxiv. Given the size of Iraq's overall spending plan, it will be important to ensure that nominal spending allocations get effectively translated into productive real assets. This leads to the agenda of supply response or “investing in investing” i.e. looking at the supply chain for public projects whether from imports or local construction and suppliers. As a practical matter this would lead to examination of logistics and competition and fair trading issues as well as the existing focus on SOE restructuring (noting that many public projects are assigned to state entities), procurement, tendering, and contracting. As the private sector is a user of this same supply chain for its own investment, such a focus would have broad benefits.

xxxv. As for the composition of public spending, the issue is whether the government can select complementary and enabling investments to promote diversification. This of course can refer to basic infrastructure like transport and power, but these sectors don't require a presumption that the government will be the implementing agency for such projects since private sector participation is an option. Instead, the experience of other diversified countries points to smaller scale but more technically challenging interventions, such as improving private sector export capacity through adoption of standards, building market knowledge, and supporting an experimental/learning culture in small and medium enterprises. This is of particular relevance in building the capacity of local firms to serve as suppliers to the oil and gas industry, which can lay the groundwork for broader skills in manufacturing and corporate services.

xxxvi. Going forward, the fact that the diversification challenge is cross-cutting will require an integrated approach over numerous policy domains. Thus, a top-down strategic coordinating role will be needed. There is already a substantial body of analytical work from the Bank and other development partners which is relevant, and points in particular to the importance of how the government spends and the associated incentives in affecting the diversification path. A strategic diversification group could approach the issue through a series of vetting or validation questions focused on the contribution of various measures to the diversification objective. For ownership, this approach should be developed by the government with technical support from its development partners.

xxxvii. *Next steps on the programmatic CEM may include the following:* integration of the economic guidance on revenue management in this report with existing budget strategy activities of the government, further analysis of the role of the financial sector in diversification and job creation (both as an enabler and a sector in its own right), and further development of the needed elements of a high-level project management function within the government to ensure consistency and integration across sector strategies. The process could be initiated by preparation of a policy action plan in cooperation with key government counterparts.

Chapter 1.

Revenue Management and Economic Diversification: Setting the Scene

I. Introduction

1. ***This report is the first phase of a programmatic Country Economic Memorandum (CEM) for Iraq.*** The CEM frames Iraq's economic challenge as follows: oil revenue can be an instrument of economic diversification, but on the current path, revenues risk being a route to a narrowly based and dependent economy. Of course, a particular allocation of revenue on its own cannot achieve diversification. Rather it will be good spending decisions plus a set of needed macro and sector policy reforms throughout the economy which will promote the kind of economic development that Iraqis want. This first phase report focuses on the link between oil and broader economic development, drawing on in-depth work prepared for this report as well as other analytical work being carried out by World Bank sector teams.

2. ***Iraq's current trajectory is not a feasible source of broad-based economic development.*** There are several reasons for this. First, even the most optimistic scenarios for oil production cannot generate sufficient jobs for Iraqis, relying only on the oil sector and revenue-driven public sector job creation. This strategy is only feasible for the smaller GCC states and even in those cases policymakers are concerned about the labor market outcomes and long-term sustainability of such a strategy. In any event, Iraq has twice the national population of even the largest GCC state, Saudi Arabia, which is characterized by a low labor force participation rate and a rising break-even oil price. Second, Iraq's economic institutions are currently completely unsuited to generating productive economic spillovers from oil sector growth and government spending: the usual enablers of a private sector supply response to buoyant revenues are absent. Third, the lack of resolution of key political questions, notably the functioning of coalition government and decentralization, absorbs the efforts of senior policymakers and worsens the investment climate. Finally, the legacy of conflict includes ever-present tensions in which a perceived lack of fair play could easily relapse into recourse to violence.

3. ***The economy's recent performance and baseline prospects make clear that the status quo will not deliver satisfactory development outcomes.*** The vulnerability to oil is shown in the sharp growth slowdown in 2009-2010, when the country should have been in the midst of a reconstruction-led recovery (Annex 1 and 2 contain detailed macroeconomic and social indicators). Both years also saw very large budget deficits along with current account deficits, attributable to low oil prices and sluggish oil exports. Where data permits a comparison, most MDG indicators have stagnated since 1990. Under the baseline projection, the economy will remain dominated by the government spending, yet as the public expenditure review shows, spending as currently formulated and managed is not delivering the results that the people expect.

II. The Role of Energy in the Fiscal Outlook

4. ***Although the dominance of hydrocarbons in Iraq's fiscal framework needs no emphasis, it is useful to set out the different mechanisms by which the oil and gas sector is linked to overall revenue and expenditure.*** This overview is complicated by the fact that Iraq's energy sector strategy and its oil management framework are always in flux and lack clarity on some key elements, notably the mode of contracting with international oil companies and intergovernmental revenue sharing arrangements.

5. ***Iraq's projected oil revenue windfall comes with substantial commitments attached.*** Under the draft Iraq Integrated National Energy Strategy (INES), Iraq would see US\$543 billion of

investment in its energy sector during 2012-2030, 85 percent of which would be undertaken by the government. According to the baseline revenue scenario, this would generate around US\$6200 billion in revenues, but subject of course to the substantial uncertainty around prices and production forecasts over such a long horizon. The spending commitments cover some direct projects to be undertaken by Iraqi state entities, but more importantly the cost recovery and remuneration (fee per barrel) payments for the international oil companies under the technical service contracts used by the central government in southern and western Iraq.¹

6. ***The government's initial focus was on generating sizable upfront revenue to finance the reconstruction and development needs of the country.*** This was apparent in the 12 million barrels per day (mbd) production capacity target by 2017 which is embedded in the contracts signed with the international oil companies (IOCs). Under this scenario, 12 mbd would only have been sustained as a production level for at most 10 years before starting to decline towards 9 mbd – which would still be among the top 3 oil producers in the world.

7. ***There are recent indications that the longer-term consequences of this production ramp-up are causing the government to have second thoughts.*** The concerns are as follows. First, the near-term horizon in the contracts provides the oil companies with little incentive for cost control or oil reservoir maintenance to protect their longer-term viability. Second, a wave of revenue of that magnitude presumed a very rapid building of the economy's capacity to spend, with little indication on the ground that this is actually happening. Third, the oil sector investment needed to realize the plan is large and front-loaded (as outlined above), and would pose financing challenges both for the government and the oil companies. Fourth, the objective of economic diversification would have inevitably fallen by the wayside. As a result of these factors, a medium term (by 2020) production target of 9 mbd now seems more likely. The actual target will become clear as field-by-field development plans are agreed between the government and the IOCs.

8. ***Lower production scenarios deepen the fiscal challenges for the government.*** Under reasonable medium-term production levels (e.g. 6-7 mbd), the government would probably incur larger deficits for a longer period of time than current targets indicate. If the government could not finance its oil sector commitments from revenues as now assumed, this would likely mean that a lot of the necessary investments will be delayed, or not be done at all, which would derail the long-term projections. One option for the government would be to line up external financing or asking the international oil companies to finance projects directly. However the first option cannot be assured and oil companies would be concerned about the risk implications of the second.

9. ***Management of the front-loaded oil sector investment plan would face major obstacles.*** Under current drafts of the energy strategy, the increase in investment is on the order of 50 percent over three years – in the context of a system already struggling to deliver existing projects. Such an upsurge in spending would be challenging even for a well-established public expenditure management system to bear; note for example the controversies over the USA stimulus spending, which is a tiny share of the total USA government spending, let alone for a system with struggles like Iraq. Furthermore, once the needed infrastructure is in place, spending would then return quite quickly to the earlier level. That imposes huge volatility on a creaking system; with the long and variable lags in spending policy, the government could have adapted itself in size to the highest level of spending long after this level of spending was actually warranted. The government would also have put in place a substantial amount of oil export infrastructure that it would use for a relatively short period of time. This suggests the possibility of rephrasing the investment to reflect the capacity constraints, discussed further in Chapter 3.

¹ The Kurdish Regional Government (KRG) uses production sharing agreements for exploration and development contracts but the validity of these is disputed by Baghdad in the absence of a clear legislative framework.

10. ***Good management of fiscal policy – with a particular focus on mitigating volatility – is critical to diversification prospects.*** The first and foremost reason is that fiscal policy is typically the key channel of transmission of oil revenue volatility to the non-oil economy. Without adequate revenue management, spending will inherit the volatility of revenues and set the stage for a procyclical boom-bust cycle in the non-oil sector. In these cycles, the interaction of recurrent and capital spending can be very damaging. In the boom stage of the cycle, the government will find it easy to make large allocations to salaries and benefits as well as investment projects. As a result, consumption and investment will increase, boosting economic growth, although some of the additional spending may fall on imports. However when revenues decline, the government will be forced to cut spending unless it has easy access to borrowing; it is at this stage that the costs of spending profligacy are manifested. Since there will be a political reluctance to cut salaries and benefits, capital spending will have to be slashed, meaning cancellation or postponement of projects that may already be underway. As a result, activity in sectors linked to the public capital program is abruptly and adversely affected with practical consequences in terms of dislocation and unemployment.

11. ***Besides the immediate macroeconomic impact, there are longer-term consequences from a fiscal boom-bust cycle.*** Once the restrictive fiscal phase sets in, operations and maintenance will be an easy target for cuts despite the well-known long-run cost of deferred maintenance. Half-finished projects pose a high risk of obsolescence, especially in a harsh physical environment like Iraq. The private sector investment environment becomes more difficult due to the inability to plan on contracts with the government or the availability of public infrastructure.

III. Obstacles to Diversification

12. ***This section outlines the main obstacles to a diversified economy.*** These are grouped under three categories: state capacity to provide security and services, the effects of a resource-rich economy, and the role of the state, particularly the legacy aspects thereof. A basic tension is present: there is an enormous need for the state to perform better in delivering basic services, but overall the role of the state in the economy is too large.

a. State Capacity

13. ***The nature of the oil sector allows it to substitute effectively for the weakness of the state.*** This is clearest for an offshore oil sector, which can be run essentially as an enclave which provides all its own services including transport, power, and security. For Iraq, the situation is somewhat more complex but the principle remains. First, oil companies have long experience with running secure and mostly self-sufficient oil installations. Extraction is intrinsically a capital-intensive and location-specific process; as long as the requisite equipment and skills can be gotten in, production can take place. Of course, movement of crude oil to the point of sale is more complicated, and this will require viable pipeline routes and functioning loading and shipping infrastructure. Nonetheless, with most of the large oil fields located in southern Iraq close to the Gulf, this can be accomplished, as the scaling up of export capacity through single point moorings near Basra shows. The key point is that a centralized and focused managerial operation working with the approval of the government is sufficient to support productive activity in this sector.

14. ***Deficiencies in state capacity have a greater impact on development of the non-oil sector.*** The reasons are straightforward. The non-oil sector is more decentralized and less location-specific than oil. Except for the largest projects, operators will not have the scale or resources to supply their own services if the state cannot provide them. Ventures will depend on the general state of infrastructure and will not have their own specialized facilities for dealing with customers. In contrast to the oil market, customer market information and development form essential investments in the viability of a project, but these can seem daunting in the context of Iraq where data in general is so scarce.

Fragility and insecurity

15. ***Insecurity forms an overarching challenge for Iraq's diversification.*** First and foremost, it takes a severe physical and psychological toll on Iraqis trying to carry on their daily business. It diverts public and private resources into maintaining security, including personnel and equipment costs. Compliance with security measures carries a substantial time and administrative burden (checkpoints and paperwork). There is an ever-present risk that a single bomb attack could wipe out years of investment in a business, even if death or injury is avoided. These factors alone will raise the hurdle for undertaking any kind of investment, and will distort the investment profile towards short-horizon or "light footprint" ventures which can more easily adapt to constantly changing circumstances.

16. ***The Iraqi state has succeeded in providing some security against large-scale terrorist attacks relative to the crisis period of 2006-2008, but a sense of vulnerability to terrorism and crime is pervasive.*** Insurgent groups are still capable of mounting mass casualty attacks in urban areas, and even during lulls in such activity, there are regular reports of fatalities from small weapons fire and bombs. Inevitably given the attention of the security forces of preventing large attacks, a wide range of criminal acts can proceed with little or no state intervention; this includes murder, kidnapping, intimidation, extortion, bribery, and theft. Thus even intensive state effort towards security has not resulted in the low-crime environment that characterized the authoritarian police states of the region prior to the Arab Spring.

Critical Services

17. ***Iraqi citizens consistently cite electricity supply as the most severe shortcoming in public services.*** The adverse impact of 4-6 hours of electricity network power per day does not need much explanation, not least in the hot summer months. The coping mechanisms generate their own side effects, such as pollution from diesel generators, risk from tampering with electricity lines, and competition for income from the business of neighborhood generators. The electricity sector itself is characterized by deficiencies at all stages, from generation capacity to distribution. Power lines are particularly vulnerable to attack, and form an easy way for insurgents to undermine the legitimacy of the government.

b. Resource Rich Economy

18. ***Even without Iraq's post-conflict challenges, the objective of diversification would run up against the structural effects of hydrocarbon resource wealth.*** As discussed in more detail below, there are multiple channels through which this source of wealth transmits its effects. At the broadest level, the availability of resource wealth reduces the need for taxation and weakens the accountability link between the citizen and the state. This is compounded when oil revenues become subject to short-termism and in particular when the political system does not incorporate the issue of depletion and the associated need to save out of oil wealth. Thus hydrocarbon economies can have a bias towards current consumption along with some associated distortions (e.g. the perception that petroleum products should be subsidized). Second, the hydrocarbon sector creates upward pressure on wages either directly (by pulling skilled labor into the sector) or indirectly (by facilitating higher public employment and wages), raising costs for other sectors of the economy. Third, if not well managed, volatility in oil prices can easily affect the conduct of fiscal policy, complicating the macroeconomic environment for private investment.

Jobs & Dutch Disease

19. ***Since Iraq's oil sector was traditionally run from within a rigid public sector structure, the non-oil labor market saw limited effect of oil sector wage relativities.*** Employees in the hydrocarbon sector are either employees of the Ministry of Oil or the various state-owned oil companies. The statist mode of operation (complemented by sanctions and under-investment) meant that employment and wages in the oil and gas sector could not expand at the rate that the sector's potential would have

warranted. Although the sector had some prestige attached to it along with the validation of sustaining output in very difficult conditions, it was not an expanding sector during the final decade of the Saddam era.

20. ***Even in the current era of expansion, hydrocarbon sector operations have a limited direct impact on the domestic labor market.*** Upstream production is handled by foreign companies whether through technical services contracts in the south or production sharing agreements in the Kurdish region. These companies rely mostly on expatriate labor for technically challenging work, although thousands of Iraqis are also employed in the facilities. Nevertheless, even employment levels in the lower tens of thousands form a tiny portion of the overall Iraqi labor force. While the oil economy represents more than two thirds of GDP, it produces only about 1 percent of total employment, or about 80,000 people. As an estimated 450,000 workers enter the labor force each year, oil on its own has little role in alleviating this pressure.

21. ***Instead, oil affects the broader labor market through public sector employment, enabled by oil revenues.*** There are around 2.7 million employees in centrally-funded ministries, state-owned enterprise (SOE) employment is around another 600,000 people, and total public sector employment amounts to 4 million people. As a result, public and SOE employees account for around 40 percent of total employment. The public sector workforce has more than doubled since 2003, and the wage bill as a share of GDP has increased from around 15 percent in the mid-2000s to 30 percent in 2012. Outside of the public sector, agriculture, manufacturing, and services combined provide most Iraqi jobs; yet of these, the vast majority are in stagnant, low-productivity positions where additional education creates relatively little comparative advantage or new opportunity, reflecting in turn the lack of modernization of these sectors. Thus for most working-age Iraqis, public sector employment is the preferred option for supporting a household.

22. ***Finally, oil has multi-sector effects which can be grouped under the term Dutch Disease, although this represents a range of mechanisms working through relative prices and the exchange rate.*** The standard mechanism is that an oil boom is associated with a real exchange rate appreciation, which in turn induces factor reallocation to the non-traded sector from the non-oil traded sector. As Iraq has an exchange rate peg, the real exchange rate appreciation would take place via changes in relative price levels. Strictly speaking, the relevant price is that of tradable goods compared to non-tradable goods, but this is proxied by the relative price levels between Iraq and other countries.

23. ***Given the exchange rate peg, real exchange rate changes will arise from inflation differentials.*** On current projections, Iraq will have cumulative inflation of 16 percent during 2010-2012 compared to 4 percent for the United States. This points to a loss in competitiveness for the traded (or import-substituting) sectors, although it is worth noting that other large-population MENA oil exporters such as Saudi Arabia and Algeria have experienced similar levels of inflation over the same period.

c. **Role of the State**

24. ***Economic diversification cannot be discussed in isolation from the role of the state. This is a separate, although related, question to the appropriate role of the state in commercial activities.*** At the broadest level, the issue is whether the economy has the institutions and incentives to enable an appropriately-diversified economy; many subtleties are of course embedded in this posing of the question, not least the determination of the “right” level of diversification. Certainly a focus on obstacles implies a view that diversification is being constrained from reaching its warranted level. In theory, market failure could be part of the problem, for example failure to internalize network externalities or a social benefit that comes from having a more diversified economy. Such failures may provide a rationale for state intervention along the lines of a modern “industrial policy.” Indeed, as explained further below, the success stories on diversification in resource-rich economies involve a significant role for the government. However, as Iraq has a legacy of state domination of the

economy, the main focus of this section is on areas where the state presence has led to crowding out of the private sector.

State-owned Enterprises

25. ***Iraq's system of state-owned enterprises (SOEs) poses challenges similar to that faced by the transition economies of the former USSR in the 1990s.*** These include a stifling presence in their sectors, financial unsustainability, overstaffing, and absence of awareness of and responsiveness to market signals. Indeed, the business model of many Iraqi SOEs is to buy and sell from other SOEs or other state entities, which makes the market basis of their activities very difficult to determine. Furthermore, deficiencies in the government management information system means that there is no integrated database on the number of SOEs, employment levels, outputs or inputs, or assets and liabilities. Nevertheless, broad indications about the characteristics of the sector are as follows.

26. ***Iraq's SOE sector includes a large variety of public entities, including ministries, directorates, departments, holdings, and bodies.*** A lack of consistency and completeness in the Government's data is a major source of confusion and makes the task of identifying all Iraq's SOEs difficult. According to the latest Iraqi-led data collection, Iraq counts 176 SOEs. The largest share (76) are held by Ministry of Industry and Minerals (MIM), followed by Oil (16), Finance (13), and Construction and Housing (11). It would be more accurate to consider many SOEs as directorates in a classic central-planning bureaucracy, rather than as single firms, since many of these entities actually consist of several factories in multiple locations. For instance, MIM's 76 SOEs include 250 factories and over 200,000 employees. MIM's industrial SOEs are organized into six main sub-sectors: engineering, chemicals and petrochemicals, textiles, construction, food and pharmaceuticals, and industrial services. While many SOEs have restarted operations after years of damage and looting, a significant number remains inoperable but with workers on payroll. SOE employment is said by the Government to have stood at about 633,000 in 2010.

27. ***SOEs impede the process of factor reallocation that should take place in a restructuring economy.*** Capital, managerial capacity, and labor are tied up in stagnant enterprises when they could be moved towards more productive activities, allowing that those activities could take place in the same facility if the financing and capacity to reorient the enterprise was present. One key impediment to restructuring is scale. The general needs of restructuring are well known and include establishing baseline information on what the enterprise is currently doing, undertaking a market assessment of its prospects in its current and feasible business lines, and then deciding on investment and staffing needs for viability (or liquidation where no viable plan can be found). These tasks require expertise which can be found in a range of players including consulting firms, private equity groups, and investment banks. Although these firms have been reluctant to operate in Iraq due to the security situation, their presence is growing.

28. ***Nevertheless, just a small number of restructurings following the general template for such exercises have taken place, and given the presence of thousands of SOEs, the task is daunting.*** As one would expect, the need to placate incumbent workers is a central issue and in many cases, a fiscal commitment by the government to displaced workers will be likely. Indeed, outside investors will only be attracted if they are confident that legacy costs will be handled by the government, and even that assumes that these investors will have overcome other investment climate constraints discussed further below.

Financial Sector

29. ***Iraq's financial sector is currently incapable of funding any large scale private non-oil investment, hobbling a needed driver of the diversification process.*** On the institutional side, the following are among the most severe constraints. First, the sector is dominated by two large state-owned banks which have not been restructured even though they carry huge legacy debts from the Saddam era. Second, reflecting the statist orientation of the economy, the sector was not configured to

make room for private sector banks and basic distortions from this mentality remain in place. Of particular note is the fact that a government check must be deposited in a government-owned bank – a seemingly easily-unwound restriction and yet one which has persisted and excludes private banks from the first line of business involving government transactions.

30. ***Private firms in Iraq mainly rely on internal funds or retained earnings for financing both their working capital and new investments.*** According to the recent Investment Climate Assessment (ICA), bank financing is relatively unimportant when it comes to financing working capital (0.9 percent), and new investments (1.3 percent). Even large firms report deriving no investment financing at all from banks, and overall, banks account for only 1.5 percent of total investment finance for the firms surveyed. Small and medium firms surveyed mention their high reliance on moneylenders, friends, and relatives for financing their working capital and new investments. These moneylenders are mainly governmental programs offered by different Ministries and “Kafala” (sponsorship) companies that provide micro-finance.

31. ***Even if institutional problems directly within the purview of the state could be fixed, market infrastructure shortfalls are significant.*** This refers to the prerequisites for banks to be able to make sound lending decisions: a clear legal framework, good quality accounting information on firms and projects, and reliable information on track record of borrowers, collateral, liens etc. Iraq has only begun to put this framework in place, and as a result, access to finance for entrepreneurs is very difficult. The *Getting Credit* rank on Doing Business is 174 and the single lowest ranking is for *Resolving Insolvency* at 183. In the recent ICA, nearly half of the firms surveyed reported having great difficulty in obtaining financing; fewer than 7 percent reported having a loan. Other forms of credit are also low, and some small and micro-enterprises have no access to banks. Financing difficulties are markedly worse for smaller firms.

32. ***Some financial sector problems may be related to resource abundance.*** Beck (2011) finds that banking systems are smaller in resource-based economies and stock markets less liquid. Financial deepening is less responsive to growth in resource-based economies, which suggests that resource-based economies invest less in their economies as they grow. Firms in resource-based economies are less likely to have a loan and to externally finance working capital and fixed assets.

33. ***Although trade finance had been one of the better functioning segments, it has been adversely affected by new Central Bank of Iraq rules*** which were introduced to tackle what it saw as a dollar drain to evade sanctions in Syria and Iran. In particular, merchants participating in currency auctions are now required to be members of the Iraqi Chamber of Commerce, which ensnares them in the same tangle of administrative complexities that gives Iraq one of the lowest *Doing Business* rankings in the world. Traders are required to produce legal documents and obtain clearance within 30 days in order to send money overseas to pay for imports and must produce a certificate from the country of origin of the goods, which has to be endorsed by the Iraqi consulate in that country.

Investment Climate

34. ***The recent ICA has confirmed and detailed the perception of Iraq’s extremely weak business climate.*** The information for the ICA is generated through an enterprise survey. Overall, the Enterprise Survey suggests significantly higher costs of doing business in Iraq, principally generated from unreliable electricity, payments due to corruption, damage due to poor transport and trade infrastructure and logistics, as well as theft and other criminal activity. An additional tier of constraints includes access to finance, informal sector competition, access to land, and taxation. The average firm in the survey suffered nearly 600 power interruptions per year. Firms report that bribes related to administrative services (including taxation) are commonplace. Payments are also frequently necessary for establishing utilities, as well as in connection with government procurement. As a reflection of the political instability in Iraq, security and crime are also major concerns, with many surveyed firms spending considerably on protection.

35. ***Other problems faced by firms include poor access to finance and land, as well as competition from State Owned Enterprises (SOEs) and the informal sector.*** Firms also reported difficulty and delays in registering land, with many firms further reporting poor access to land for investment in general, a problem caused by widespread government ownership of prime land and inefficient methods of allocation to the private sector. With regard to competition from the informal sector, firms report difficulties confronting competition from unregistered companies, many of which infringe upon the rights of registered businesses, and face lower costs due to their noncompliance with formal rules.

Procurement

36. ***The interaction of firms with the government through a supplier relationship is just as troubled as other dimensions.*** Given the size of government spending in the economy, the government is a major customer for many firms in the economy, particularly in sectors like construction, equipment and information technology, and facilities services. Yet doing business with the government through procurement is extremely difficult. The procurement law is outdated; in particular it has a focus on complex processes for transactions which creates the scope for abuse since the culture becomes one of working around the rules – or just tolerating huge delays in contract processing and implementation.

IV. Conclusion

37. ***It should by now be evident that oil and diversification cut across virtually every systemic challenge currently facing the Iraqi economy.*** While the objective might be a diversified and private sector-led economy, all the policy and price signals are going on the opposite direction. Conflict and fragility have exacerbated these tendencies. Even a relatively insulated oil sector is exposed to same implementation capacity constraints as the non-oil economy, if on a lesser scale. If revenue is not realized on the scale expected and the non-oil sector does not take off, there is a risk of zero-sum politics (re-) asserting itself, contributing to a very dangerous situation. Thus the question for the remainder of this first phase of the CEM is to set out the policy framework whereby the economy can be reoriented to generate the productive opportunities that the public expects. This unfolds in two parts: Chapter 2 looks specifically at the oil revenue allocation decision vis-à-vis the non-oil sector, while Chapter 3 considers the opportunities in the non-oil sector and how to unlock them.

Chapter 2.

Allocation of Oil Revenues: An Economic Framework for Analyzing the Options

I. A Revenue Allocation Model

38. *This chapter provides an analytical framework for the tradeoffs Iraq faces between its short-term and long-term expenditure priorities.* In the short-term, the government has placed an understandable emphasis on public employment, transfers, and subsidies. The long-term view must recognize oil and gas as finite resources and ensure that there are above-the-ground financial or physical assets corresponding to below-the-ground extraction. This notion is encapsulated in the so-called Hartwick (1977) rule: that rents from resource depletion should be fully invested in physical assets to ensure equal treatment of all generations. Beyond a generic recommendation for a balanced approach to these spending needs, the objective of this chapter is to illustrate the mechanisms and challenges that will arise from the different uses of oil revenue. The chapter is by necessity somewhat technical, as such an assessment must trace through the effects of different spending allocations on prices and quantities in different sectors of the economy. Nevertheless, these channels are the technical analogue to common concerns about economic development in oil-rich countries, such as the “resource curse” and Dutch Disease.

39. *Iraq’s context as a post-conflict country is an essential backdrop to the analysis. For the past three decades Iraq has been mired in conflict and isolation.* The eight year Iran-Iraq war cost somewhere between 0.5 and 1.5 million lives on both sides. The latter stages of this war saw a parallel onslaught against the Kurdish people of northern Iraq, leading to between 50,000-100,000 deaths. In 1990-1991 the Iraqi invasion of Kuwait led to the first Gulf War, with approximately 100,000 civilian and 20,000-30,000 combat Iraqi casualties, the former arising in particular from the failed uprisings in the aftermath of Iraq’s ejection from Kuwait. After a decade of relative peace but stringent sanctions, 2003 saw the beginning of the second Gulf War, which cost around 120,000 civilian deaths and resulted in nearly 5 million refugees. The second Gulf War was marked by initial early victories for US-led coalition forces, which were followed by a period of stalemate and intense urban combat. Although relative security has been restored and most US troops have left, Iraq remains a violent country.

40. *The co-existence of reconstruction needs, economic catch-up, and a vast ramp-up of oil production lead to circumstances unlike most resource windfalls in middle income countries.* The first stage of restoring stability has been achieved: annual headline inflation has been reduced from over 60 percent per annum to single digits. The Iraqi dinar has remained stable against the US dollar. Movements are being made towards debt sustainability. This started with an 80 percent reduction of Paris Club debt in 2004, and is continuing with negotiations with non-Paris Club creditors. Domestic explicit fuel subsidies have been removed, although implicit subsidies remain extremely large. Iraq’s improving stability and economic progress have laid the foundation for a large increase in oil extraction. Oil production has been steadily increasing from a low of 1.5 mbd (million barrels per day) in 2003 to 2.6 mbd in 2010. In late 2009 and early 2010 the central government successfully auctioned nine service contracts for fields in southern Iraq, and estimates of potential output in 2030 range from 5.5 mbd (BP, 2011) to 12 mbd (Iraq Ministry of Petroleum). Such a dramatic increase in oil production will have a profound effect on the Iraqi economy, as oil production currently accounts for over half of GDP and 83 percent of government income.

41. *The analysis constructs a stylized model of the Iraqi economy.* For illustrative purposes, the model is calibrated to data from the Iraq economy in 2007, collected from a number of sources. It is then used to test the implications of five revenue allocation scenarios: (i) increasing government employment; (ii) increasing investment in public capital; (iii) increasing savings in foreign assets; (iv)

increasing direct transfers to households; and (v) increasing all spending proportionately. Although the final option could be considered a baseline scenario, since it keeps the relative shares of each component at recent levels, it is useful to consider the four options in isolation to elucidate the main channels.

42. ***The framework finds that investment in public capital has the potential of having the most significant effect on real GDP.*** Although this is a logical consequence of the assumption that public capital is productive, it does not on its own warrant a prioritization of public investment over other needs. In particular, investing the entire windfall immediately is likely to incur large inefficiencies in converting investment flows into usable capital. For this reason, the framework is augmented to consider a combination of scenarios (ii) and (iii), making use of an offshore “parking” (or transitional) fund to delay some investment whilst absorption constraints are relaxed. This policy leads to a relatively large increase in non-oil real GDP since it moderates the investment allocation during the steepest phase of adjustment costs, and also builds up a large stock of foreign assets for future use. Nevertheless, some upfront investment is essential, since adjustment costs decline with the size of the capital stock.

43. ***The model is not a budgetary tool, but it can be used to frame medium-term budget strategies.*** It employs a general equilibrium model, which can later be used by policymakers. The model is designed to be simple, that is, without too much optimizing behavior. This is consistent with the focus on positive, rather than normative, policy prescriptions, and allows different policies to be tweaked and adjusted. The general equilibrium structure gives a broad feel for the effects of the oil windfall throughout the economy. Finally, the model is designed for hands-on use by technical experts in the government. It operates in a Microsoft Excel spreadsheet, with a single visual basic routine for iteratively finding equilibrium in each period. Hence, it is very user-friendly, as documented in the Appendix.

44. ***The chapter continues as follows.*** Section 2 describes the salient aspects of the Iraqi economy. It covers oil, the government sector and fiscal policy, the private sector and output, and households and consumption. Observations on each aspect are described, and then translated into a representation in the stylized model. Section 3 then reports the results of the analysis. A collection of charts are used to illustrate the implication of each spending policy throughout the economy. Section 4 concludes. An appendix to the report outlines the model formally, describes the calibration to Iraqi data, and guides the spreadsheet calculation of the model for future users.

II. The Iraqi Economy

45. ***The salient features of the Iraqi economy for the purposes of calibrating the model can be described under five topics:*** oil production, the government sector and fiscal policy, the private sector and output, the labor market and households and demand. This section outlines key features of each, and how they are represented in our stylized model. A more formal exposition of the model is presented in the appendix. Although some of the calibration uses data from 2007, this reflects consistent data availability across a range of parameters at the time of writing; the model is easily adapted to new data as it becomes available.

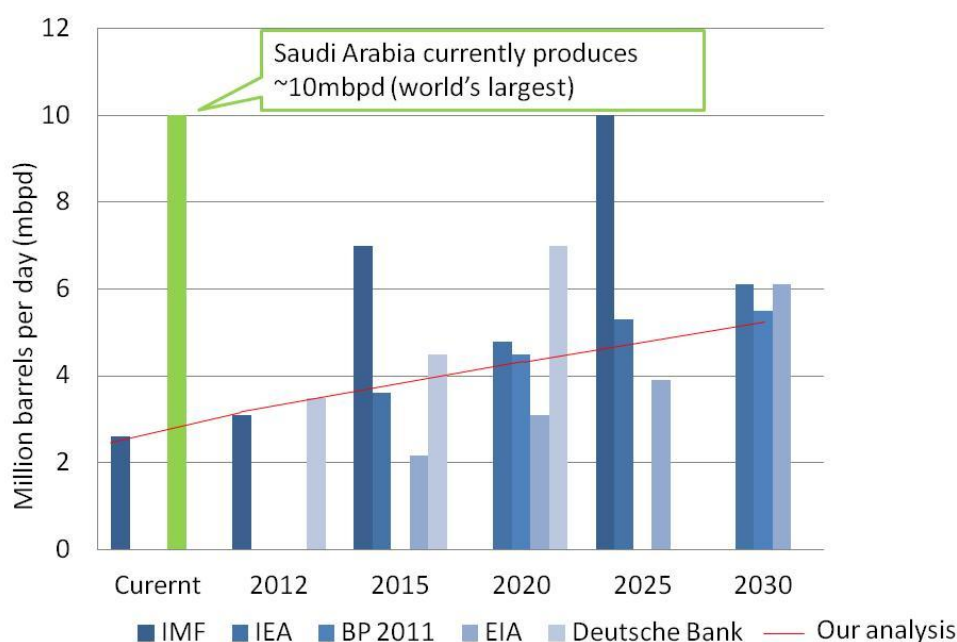
a. The Oil Sector

46. ***Iraq's oil output has increased significantly from its nadir of 1.3 mbd in 2003.*** In 2011 oil production was estimated to have reached 2.7 mbd. This is expected to increase dramatically over the coming decades, with 2030 output forecasts ranging from 5.5 mbd (BP, 2011) to 12 mbd (Iraq Ministry of Petroleum). From June 2009 to February 2010 the Iraqi Ministry of Oil awarded technical service contracts to develop Iraq's existing southern oil fields. If all of these contracts are fulfilled, Iraq's crude oil production will increase to approximately 12 mbd as early as 2017. Concerns about stability and capacity have contributed to the wide range of forecasts. History suggests that increasing output is a slow process, with Russia taking ten years to increase output by 3.8 mbd and Saudi Arabia

taking five years to increase output by 2 mbd. Oil revenue accounts for the vast majority of government income. In 2007 this amounted to 83 percent of government income (IMF, 2010). The oil sector also accounts for the majority of output. In 2007 it was responsible for 54 percent of value added (USAID, 2009).

47. *In the framework, oil revenue is considered to be an exogenous windfall which accrues directly to the government.* To provide a benchmark scenario based on publicly available data, the projected size of the windfall is based on forecasts of Iraq’s crude oil production in BP’s Energy Outlook 2030 (2011). This suggests that production will rise from 3.1 mbd in 2012 to 4.5 mbd in 2020 and 5.5 mbd in 2030. This is at the conservative end of estimates. Oil revenue is based on a constant price per barrel of US\$70, and we ignore oil price volatility. To account for cost margins we take government oil income to be a constant proportion of total revenue, based on 2007 data.

Figure 1: Estimates of Iraq’s potential oil output vary, though it is expected to increase significantly in the coming two decades



Source: IMF, IEA, BP, EIA, Deutsche Bank, Middle East Economic Survey

b. The Government Sector and Fiscal Policy

48. *Government income is assumed to be spent across four main areas: government employment (approximately 30 percent), public capital accumulation (17 percent), saving in foreign assets (18 percent), and transfers and subsidies (35 percent).*² Spending on government employment is high, due to both high wages and high government employment. The average wage in the government sector is higher than that of any other sector, at ID 493,000 per month. This significantly exceeded the average wage in the economy of ID 348,000 per month (Iraq Household Economic Survey 2007). The government sector is also the largest employer of any sector in the economy, accounting for 33 percent of the labor force in 2007 (USAID, 2009).

49. *Public capital comprises the majority of Iraq’s capital stock, and is undergoing a reconstruction effort following decades of war.* Reports by the Iraq Committee on Economic Policy suggest that virtually all of the capital composition in 2007 was public capital (Paper of Committee on

² These shares can be calibrated based on the public expenditure review.

Economic Policy, 2009). Although there must be some private capital in the economy, this statistic reflects the high level of government ownership and the chronic flight of private capital and expertise during the Saddam years. Estimates of the total size of the capital stock also vary widely, due to difficulties in estimating the amount of capital destroyed during years of conflict.

50. ***In 2010 Iraq holds an external stock of public debt approximately equal to 107 per cent of GDP (World Bank, 2011).*** This follows an 80 percent reduction of debt to Paris Club creditors in 2004. The Central Bank of Iraq has stated that approximately half of the remaining debt is currently subject to negotiation with non-Paris Club (mainly Gulf country) creditors.

51. ***The model has three sources of government revenue.*** The first, and by far the largest, is exogenous income from oil. In addition the government collects interest payments on foreign assets (which are initially negative), and profits on production and rents from government capital. These profits and rents accrue to the government in order to close the model.

52. ***The model allows government spending to be allocated variously between government employment, public capital accumulation, saving in foreign assets and transfers and subsidies.*** Spending on government employment is split between wages and number of employees. Government wages are set as a constant multiple (5.4) of the wage in the informal sector. These workers produce non-traded public services that are consumed by households. The value of this output is set equal to the wage bill.

53. ***Public capital is the only form of capital in the model. It is used in production by the traded, non-traded and residual sectors.*** Rather than requiring that capital be allocated efficiently between each sector to equalize their marginal products, each sector uses the whole public capital stock in production; this can be seen as representing the role of infrastructure and public goods in all productive activities. The government's decision to accumulate capital determines how efficiently it is used. The relative efficiency of capital in each sector is measured by its marginal product.

54. ***Public sector investment flows translate imperfectly into public capital.*** This is modeled through adjustment costs for investment. This accounts for the whole range of issues in public investment management such as long planning and implementation procedures, corruption and poor project choice. These costs are assumed to increase with the size of investment and decrease with the size of the existing capital stock. The extent of the adjustment costs are summarized by the Public Investment Management Index (*PIMI*). This coefficient measures the increase in capital stock for every dollar spent on investment by the government, and as explained above it is a function of the rate of investment and the capital stock. An approximate estimate for the *PIMI* in low and middle income countries is 0.5; half of spending on public investment translates into actual increases in the public sector capital stock.³

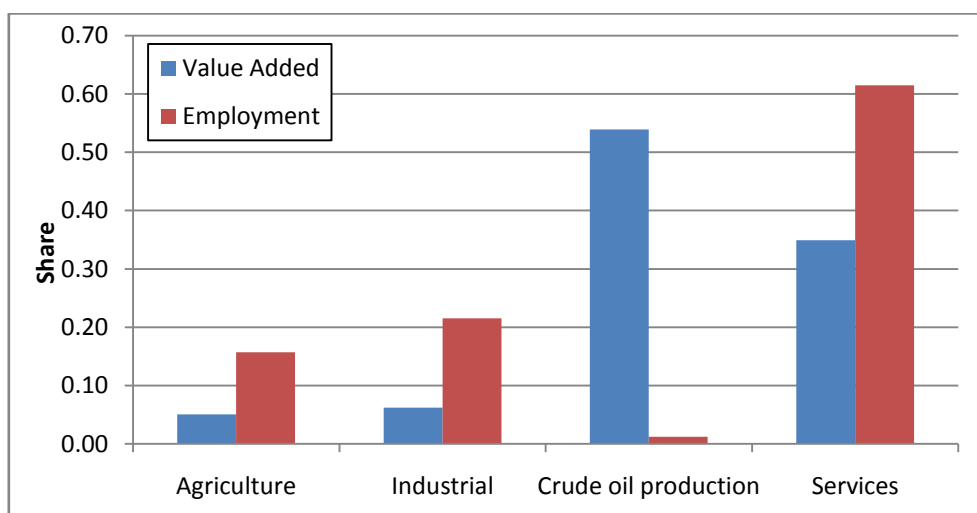
55. ***The model could incorporate a role for private investment in various ways, the conceptual challenge being to link private investment to oil revenue flows.*** As discussed in Chapter 1, Iraq's financial sector does not play an effective intermediating role, and the channels linking domestic saving to domestic capital formation consist of self-financing, informal channels, or government guarantee programs. In the presence of such imperfections, it is well known that the saving-investment linkage cannot plausibly be modeled at the aggregate level; as the degree of credit constraints varies across individuals and firms, the distribution of income and wealth matters for capital accumulation. Another option to capture the role of the private sector would be through the *PIMI*, via an assumption that it could be raised through private sector involvement in capital accumulation. This option is discussed further in the concluding section.

³ *Rents to Riches?: The Political Economy of Natural Resource-Led Development*, By Naazneen Barma, Kai Kaiser, Tuan Minh Le and Lorena Vinuela, World Bank, January 2012.

c. The Private Sector and Production

56. *The economy's production structure is dominated by oil and services, but its employment structure is linked to agriculture.* Output in Iraq can be divided into four main categories, as illustrated in Figure 2. Crude oil production accounts for 54 percent of GDP. The non-traded service sector accounts for the next largest proportion of output, at 35 percent of GDP (both government and non-government services). Agriculture and industry together account for only 11 percent of output, but over 35 percent of employment. Thus, compared with oil production these sectors are labor intensive.

Figure 2 Value added and employment breakdown by sector



Source: USAID, 2009

57. *The model separates the economy into five sectors: government, traded (manufacturing), non-traded (services), traded food, and a residual non-traded sector that incorporates agriculture and the informal sector.* Output in the government sector has constant returns to scale with labor as the only factor of production. Output in the traded, non-traded and residual sectors is produced by both labor and government capital. The model assumes that total factor productivity in each of these sectors grows at a constant rate of 2 percent per period. The share of labor (and in turn capital) in each sector is calibrated using data on wages. This data suggests that the non-traded services sector is more capital intensive than the traded manufacturing sector. Output of the traded food sector is set to zero, so that this sector only accounts for food imports.

58. *The balance of payments is dictated by the current account, as it is assumed that there is no domestic private capital and the capital account is closed.*⁴ Oil is the primary export. The traded manufacturing sector produces a good that is sold at the world price. This can be imported or exported depending on the level of domestic output and demand from both private consumption and public investment. The traded food sector refers to a food good that is highly substitutable with domestically produced agriculture. This food is not produced domestically, so only refers to food imports. The final component of the current account is earnings on foreign capital, which accrue directly to the government.

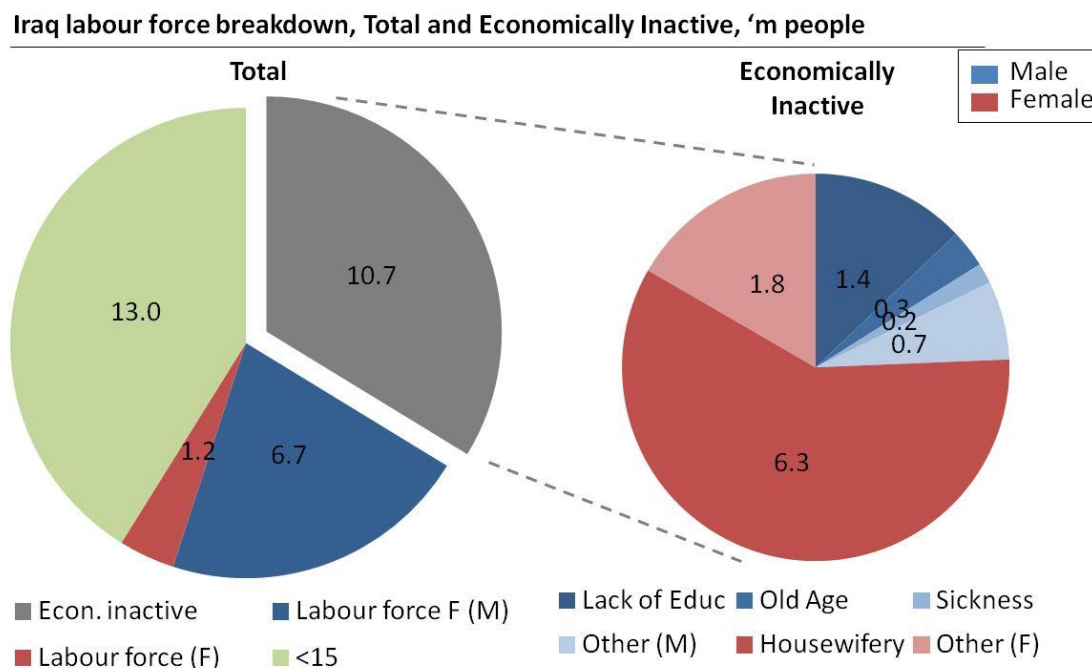
d. The Labor Market

59. *Iraq's labor force makes up a relatively small proportion of its population.* As illustrated in Figure 3, of the population of 31.7 million in 2011, 18.7m (59 percent) are aged 15 years or above. Of those, 7.9m are in the labor force. The remaining 10.8m of working age are considered economically inactive. The majority of those deemed economically inactive by this survey are women. However,

⁴ In practice, most foreign capital is coming into Iraq as an oil sector enclave.

there remain 1.4m males who are not in the labor force and, when asked, attribute this to a lack of education. This group of males is drawn into the labor force if the real wage falls or labor productivity improves. Of the 7.9m in the labor force, the majority are employed by the government, followed by the non-traded service sector. The government also pays the highest wages, as mentioned above.

Figure 3: Iraq's labor force



Source: Iraq Knowledge Network, Labour Force Factsheet, 2011

60. **The model adopts a stylized representation of the labor market.** The government sets the wage for government workers as a constant mark-up over the wage in the residual sector. Wages in the traded and non-traded sectors are set as a constant proportion of the government wage. Labor moves between each sector to equate its marginal product with each sector's wage. The residual sector is comprised of the low productivity non-traded agricultural sector and the group of males outside the labor force who may plausibly be drawn in if labor market conditions improve. The workers in the residual sector all produce a basic non-traded consumption good, be it food, cigarettes or untraded services, which has a high elasticity of substitution with imported food. The wage in the residual sector adjusts to clear the labor market, driving wage movements in the formal sectors.

e. Households and Demand

61. **The majority of household spending is on traded goods, followed by agriculture and foodstuffs, and non-traded services.** Average household expenditure per capita each month is ID 132,000. The Iraqi household economic survey 2007 breaks this down across a bundle of goods. The model of household consumption assumes that households demand a subsistence level of food. This can be met by consuming a bundle comprising both imported food and output from the domestic residual sector. Only after the household satisfies this subsistence level of approximately ID 38,000 per capita each month (Paper of the Committee on Economic Policy 2009), does it begin to demand other goods. Following a Stone-Geary Linear Expenditure System, the model assumes that the household spends a constant proportion of its income above the subsistence level on each good, which is calibrated to demand in 2007. The price of the traded manufacturing and traded food is set exogenously at world prices. The prices of non-traded services and non-traded agriculture are set so that they equate supply and demand in each period.

III. Evaluating the Spending Scenarios

62. *This section evaluates five scenarios available to the Iraqi government for managing its anticipated increase in oil income.* It shows that the most effective way of boosting Iraq's non-oil GDP is to invest in domestic capital while using an offshore parking or transition wealth fund to smooth adjustment costs. By assumption, the government has four instruments at its disposal: government employment, domestic investment, foreign savings and direct transfers. The balanced scenario traces the effects of increasing government spending on all four levers in proportion to their share of government spending in 2007. For clarity of exposition, the section proceeds first by focusing on allocating the incremental government revenue to each use in turn. It finds that scenario (ii), investing in domestic capital, increases non-oil GDP by the greatest margin. However, this strategy also incurs losses as adjustment costs need to be borne when ramping up domestic investment. An appropriate balance is found by combining investment in domestic capital with an offshore parking fund. This reduces losses to adjustment costs leading to similar levels of domestic capital and real GDP, but far more foreign assets, than in the scenario without a parking fund.

63. *One strength of the model is that it reveals contrasting outcomes for output, prices, consumption, and sector prospects under the different scenarios* (summarized in Table 1). The balanced scenario where the windfall goes proportionally to all spending categories leads to a large increase in consumption but only a moderate increase in output. Using the windfall to increase government employment leads to smaller rises in both output and consumption than the balanced scenario and is accompanied by steep inflation in both wages and prices. A GCC-style sovereign wealth fund leads to a very large increase in long-run consumption, but only a small increase in real output, which comes primarily from the non-traded sector. Transfers increase consumption, but have virtually no impact on real output.

64. *Even with assumptions favoring domestic investment, it is not a dominant option due to deficiencies in public investment management.* To counter this the model considers a hybrid scenario where the revenue windfall is invested in domestic capital while an offshore parking fund is used to smooth adjustment costs. The smaller adjustment costs in this scenario mean that both real GDP and the capital stock rise by a similar amount in the long-run as with all of the windfall going to domestic investment. But far more foreign assets are accumulated than in the scenario without a parking fund. If managed correctly – a major proviso – the combination of domestic investment and a transition fund provides a revenue-financed non-oil boom and some diversification in the form of foreign assets.

Box 1: Reading the Charts

The charts in the remainder of this section use the following symbol notation.			
Symbol	Description	Symbol	Description
T	Transfers	XN	Output, Non-traded
DeltaF	Foreign savings	XR	Output, Residual
bgIg	Domestic investment (bg: price of investment, Ig: quantity of investment)	C_T	Consumption: Traded
wgLg	Government wage bill (wg: government wage, Lg: government employment)	C_N	Consumption: Non-traded
Kg	Government capital stock	C_F	Consumption: Food (aggregate)
F	Foreign assets	pN	Price: non-traded services
LG	Labor, Government	pR	Price: non-traded residual
LT	Labor, Traded	wR	Wage: non-traded residual
LN	Labor, Non-traded		
XT	Output, Traded	LR	Labor, Residual

Table 1: Summary of Results from the Allocation Scenarios

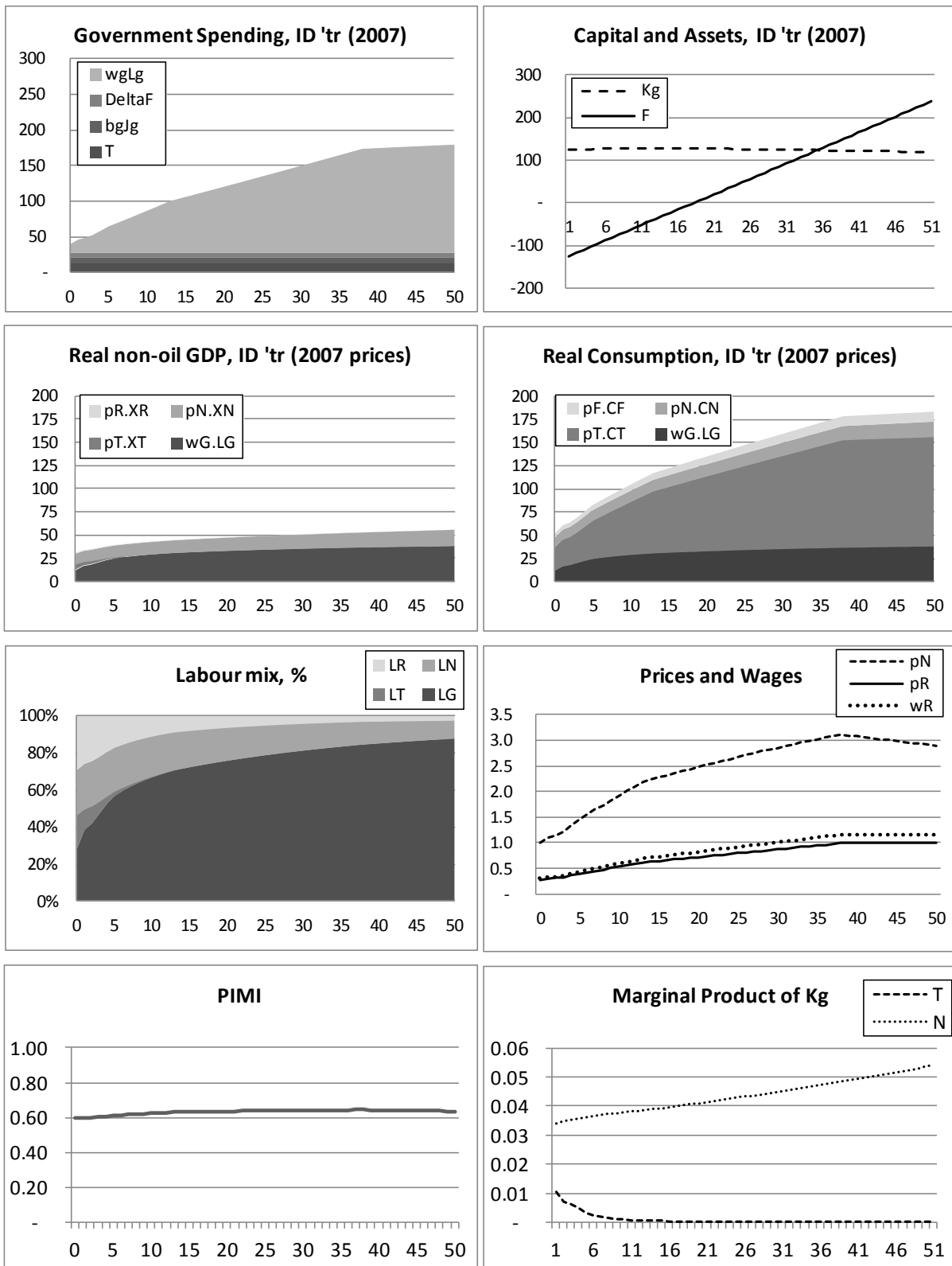
Scenario	Government	Consumption	Relative Prices
Employment & Jobs (i)	Draws labor from traded sector, agriculture sector disappears	Met from imports. Eventually levels off as no capital or foreign wealth accumulated.	Sharp real exchange rate appreciation.
Investment (ii)	Steady public capital accumulation; constant employment allows labor switch into traded sector	Can be met from expanding non-traded sector, traded sector can export more	Real depreciation, traded sector competitiveness increases.
Foreign Savings (iii)	Constant capital stock & employment.	Lower initially but rises as foreign assets are built up.	Real depreciation. Traded sector expands.
Transfers (iv)	Constant capital stock and employment.	Met from mix of rising imports and expanded non-traded sector	Real appreciation; traded sector shrinks.
Balanced (v)	Capital, employment, and wages rise	Met from mix of rising imports and expanded non-traded sector	Real appreciation, traded sector shrinks. Effects moderated relative to (iv)

(i) Using the windfall to increase spending on government employment

65. **Directing spending towards public employment leads to a huge state sector and crowding out of almost all domestic production.** There is little accumulation of capital or foreign assets, and a large rise in consumption by government workers. Furthermore, there is steep inflation in prices and wages. In this scenario we assume that the government wage is a constant mark-up over the residual wage with the remainder of incremental revenue spent on increasing the number of employees. The increase in government employment quickly draws workers out of the traded and residual sectors, while all wages steadily increase for the duration of the analysis. Heavy spending on government employment leads to little accumulation of public capital or foreign assets. The existing spending on public capital only suffices to maintain the existing capital stock once inflation in the non-traded sector, adjustment costs and depreciation are taken into account. Only a small stock of foreign assets is accumulated as most public spending is directed towards the government wage bill.

66. **Spending on the government wage bill leads to a large rise in real consumption by government workers.** Consumption is almost entirely directed towards imports, with real consumption of food and non-traded goods remaining relatively static. This is because more households are receiving higher government wages, leading to higher demand for both traded and non-traded goods (lower income households would spend more on food and in the residual sector). The demand for traded goods is met by imports, while the domestic traded sector shrinks. The demand for non-traded goods is met mostly by a steep rise in their price, as competition for workers from the government sector mean that there aren't enough to move into this sector to increase production. Consumption of the government-produced public good rises, since the public sector eventually comprises nearly 80 percent of the economy. However, this is far less than the rise in real consumption of the traded good because much of the spending on government employment is taken up by wage inflation.

Figure 4: (ii) Using the windfall to increase spending on government employment



67. *The large increase in government employment draws employees first from the traded and residual sectors, and then from the non-traded sector.* As the government does not invest sufficiently in public capital, the latter declines. This further reduces non-oil output. Real output rises only because of the assumed exogenous improvement in total factor productivity.

68. ***Directing spending towards public employment also leads to a steep rise in prices and wages.*** The price of the non-traded good rises and the real exchange rate appreciates, because output of the non-traded good cannot rise to meet excess demand. Wages also rise more than any other scenario in this analysis as the government increases competition for workers.

(ii) Using the windfall to boost public investment

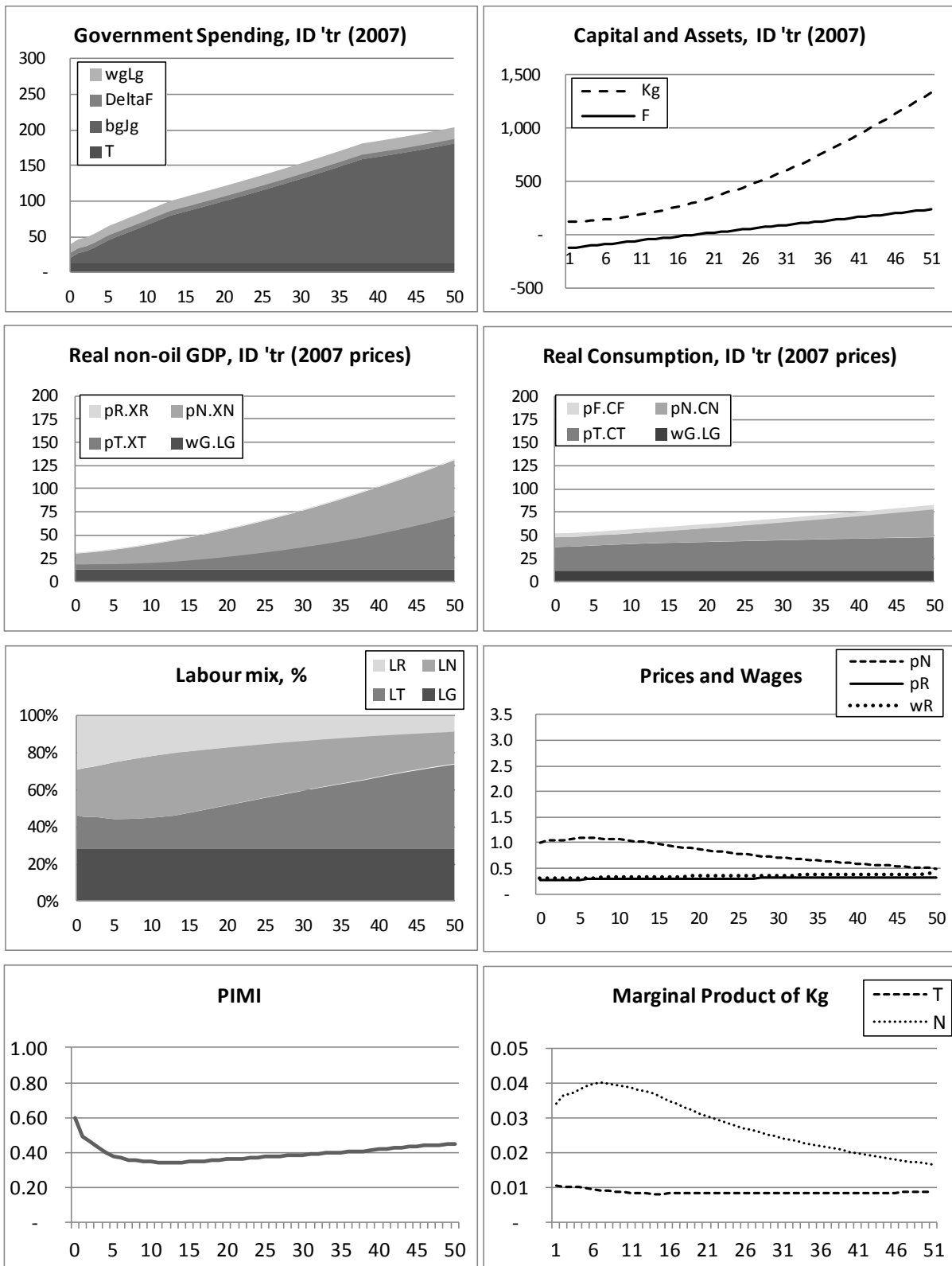
69. ***Spending Iraq's oil windfall on investment in public capital will lead to a large rise in non-oil real GDP, with a moderate increase in consumption and a mild short-term real appreciation.*** If the policymaker's focus is on output, rather than consumption, then the windfall should be directed towards increasing the capital stock. This model abstracts from the welfare implications of output over consumption; these benefits include employment, the positive externalities of an educated workforce, and the stability that comes from an economy with a more diversified exposure to oil prices. However, this scenario also shows that large increases in investment will incur some adjustment costs. This is illustrated in the large dip in the Public Investment Management Index (PIMI). In scenario (iib) we address these costs by considering the use of an offshore parking until absorption constraints are relaxed.

70. ***Consumption of the traded good rises immediately.*** This is met initially by imports, but eventually the economy starts exporting the traded good. Consumption of the non-traded good also rises, despite demand from investment accounting for up to 50 percent of output of this good. Real consumption of the non-traded good still rises by more than in scenario (i), because higher labor productivity and more available workers mean that output can respond more readily to demand, thus resulting in less inflation.

71. ***In contrast, spending on public capital translates into a large increase in real output because government employment stays fixed, freeing more labor for employment in the private traded and non-traded sectors.*** The increase in public capital also lifts the productivity of labor in both sectors. As demand for the non-traded good is more easily met because of the increased capital stock, labor is freed to move into the traded sector. The traded sector expands as it becomes more internationally competitive due to the higher capital stock, and the supply of labor that has been released from the non-traded sector. As a result, output from both the traded and non-traded sectors see a large expansion.

72. ***This scenario also sees a mild real appreciation, followed by a depreciation of the real exchange rate.*** For the first decade the capital stock does not expand enough to allow the non-traded sector to meet all demand arising from both consumption and investment. However, as the capital stock rises demand for the non-traded goods will be more easily met, causing their prices to fall. Wages rise, but do so far less than in the previous scenarios where government employment was placing large pressures on the labor market. In the longer term the real depreciation helps to make the domestic traded sector more competitive internationally.

Figure 5: (iii) Using the windfall to boost public investment



73. *However, this scenario sees adjustment costs bind more than in other scenarios, with a large fall in the PIMI.* This happens because we assume investment is not converted directly into public capital. Instead, the effectiveness of investment will depend on how much is happening in any period. The more investment in a period, and the smaller the capital stock, the less than investment

will be converted into capital. This accounts for the effects of long planning procedures as well as of embezzlement, poor project choice and the like. To reduce the effects of these costs, we consider the use of a temporary offshore parking fund in scenario (iib).

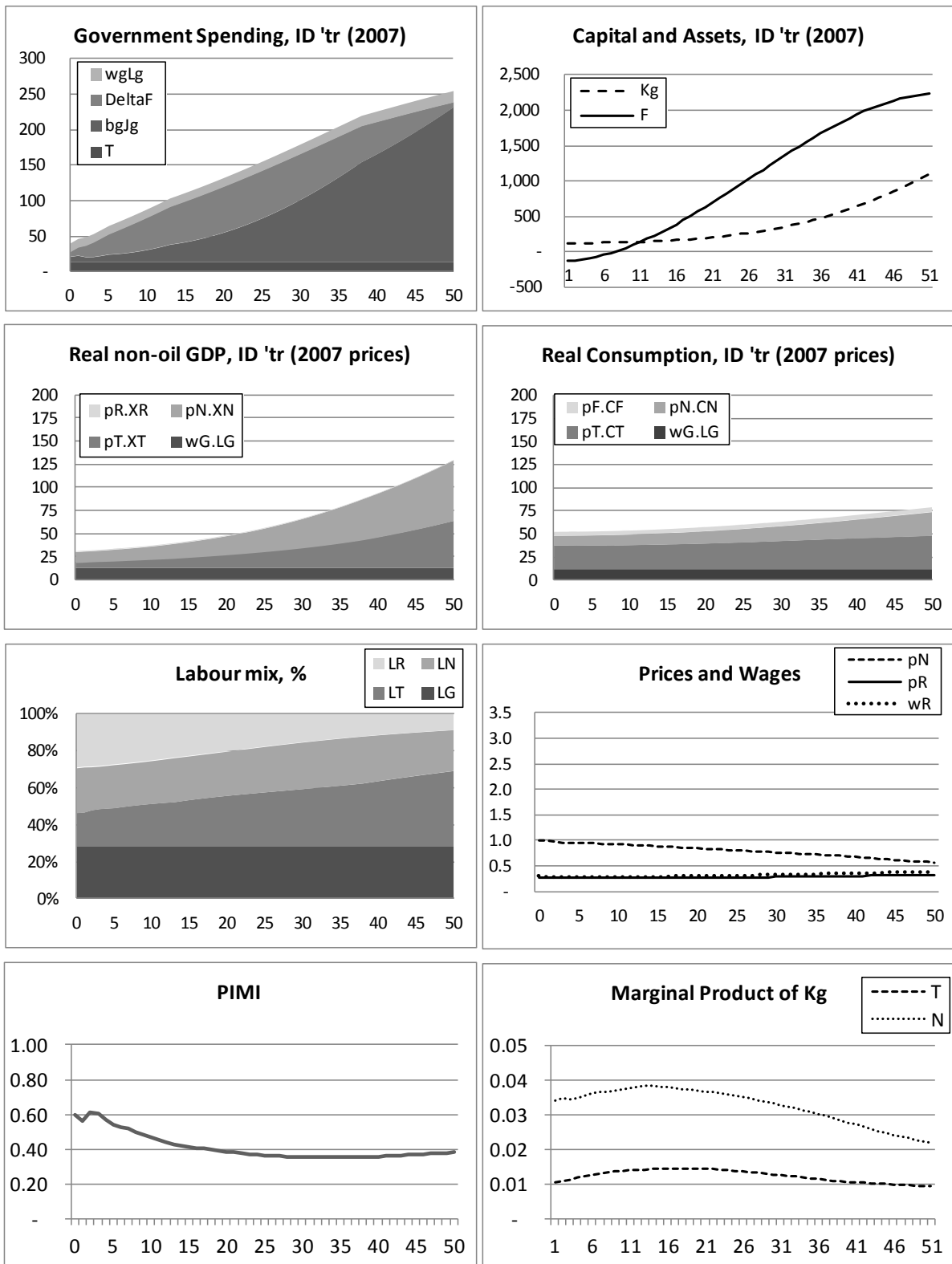
(iib) Using the windfall to boost public investment with a transition saving fund

74. ***Directing Iraq's windfall towards public capital while temporarily parking some of it abroad will reduce adjustment costs and lead to similar levels of real output and public capital, but far more foreign assets than in scenario (ii)*** where there is no parking of funds. The offshore parking fund holds some of the windfall abroad, reducing the losses due to adjustment costs. Although the PIMI again falls below 40 percent, curtailing the rate of investment initially allows the capital stock to slowly accumulate to a point where the adjustment costs are less severe. After period 25 an increasing amount of the windfall is directed towards capital accumulation. By this stage the stock is large enough to accommodate the higher investment.

75. ***Over the fifty year horizon of the model the parking fund results in a capital stock 80 percent of that in scenario (ii) but a stock of foreign assets 10 times higher.*** This can be attributed to the effects of adjustment costs. In scenario (ii) a large amount of investment, relative to the capital stock, was undertaken in the early days of the windfall. Due to the small initial size of the capital stock it could not be absorbed, and so was effectively lost. In this scenario the investment that would have been lost to adjustment costs is redirected towards foreign savings. These foreign assets provide both an extra income stream for the government, and a stock of funds that can be more efficiently spent on investment at a later date. In this scenario incremental consumption is delayed by up to 10 years due to the use of the offshore parking fund. As demand for non-traded goods, from both consumption and investment, is less than in scenario (ii) there is less upwards pressure on the price of non-traded goods.

76. ***Output in this scenario also increases more slowly than in scenario (ii).*** As the oil revenues are released more slowly into the economy, the abrupt expansion of the non-traded sector to meet consumption and investment demand in scenario (ii) happens over a longer period in this case. Over time the accumulation of public capital increases output in both the traded and the non-traded sector. However, as the price of non-traded goods (and thus the real exchange rate) appreciates less in this scenario, there is relatively more demand for the output of the non-traded sector. In turn, relatively more of the labor force is concentrated in the non-traded sector than in scenario (ii). As mentioned previously, the use of an offshore parking fund places less upward pressure on the price of the non-traded good. This reduces the amount of the consumption basket that is weighted towards the traded good, and means that the non-traded sector is relatively larger in this scenario than in scenario (ii). The wage in the residual sector eventually rises higher than in scenario (ii), but does so more gradually. This lifts wages in each sector. The price of the residual non-traded good follows that of the wage.

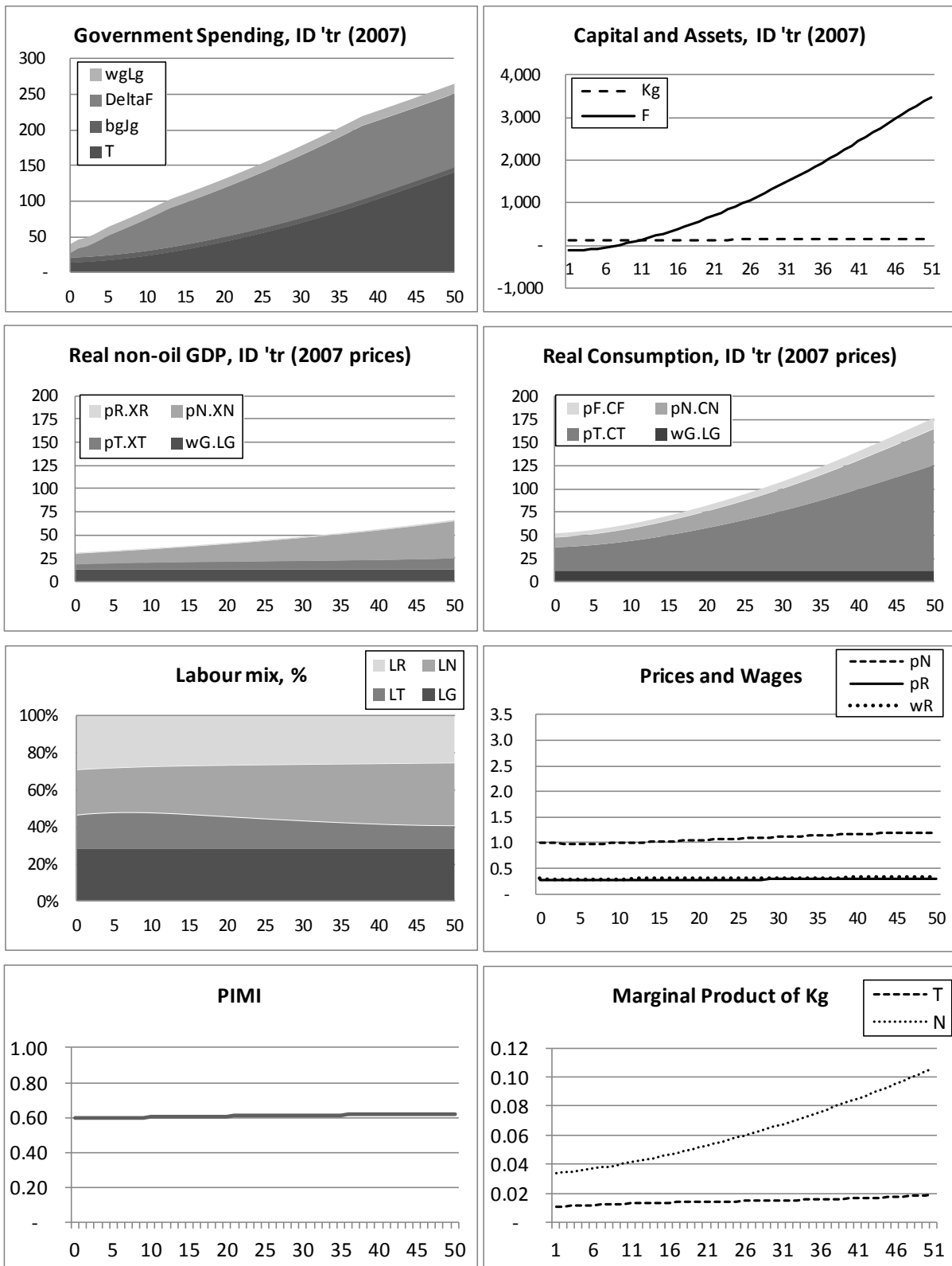
Figure 6: (iib) Using the windfall to boost public investment with a transition fund



(iii) Using the windfall to invest in foreign assets

77. Saving the entire windfall in a fund holding foreign assets and transferring the earnings on the fund to households leads to a very large increase in real consumption, a small increase in

Figure 7: (iii) Using the windfall to invest in foreign assets



output and a moderate appreciation of the real exchange rate. In this scenario the government initially invests all oil income abroad. The assumed 2.5 percent real earnings on this are distributed to

households as transfers, in a bird-in-hand style rule.⁵ Government employment and domestic investment stay constant. Although the stock of foreign assets increases rapidly, the stock of public capital stays constant. This fails to increase productivity in both the traded and non-traded sectors, and the country resembles a rentier economy.

78. ***This scenario sees a very large and permanent increase in real consumption.*** This is funded mainly by transfers of interest earnings on the country's offshore assets. The increase in real consumption is primarily directed towards consumption of imported tradable goods, while the consumption of domestic non-traded goods increases much less. This can be attributed to the behavior of the production side of the economy.

79. ***Real output in this scenario increases, but by much less than in the scenarios focused on domestic investment.*** This is because the stock of public capital stays constant. The large transfers to households increase consumption demand for both traded and non-traded goods. As capital is not accumulating the domestic traded sector becomes less competitive and demand for this good is met by imports. Demand for non-traded goods cannot be met by imports, and so it is met by a steep rise in their price and by drawing workers from the traded sector into the non-traded sector. This is an illustration of Dutch disease. Spending the interest earnings on foreign assets while neglecting domestic capital accumulation leads to steady inflation of both prices and wages. As productivity in the non-traded sector is not boosted by an increased capital stock, excess demand for non-traded goods is met by an increase in the price. The price increase drives up the wage and draws workers away from the uncompetitive traded sector.

(iv) Using the windfall to boost government transfers

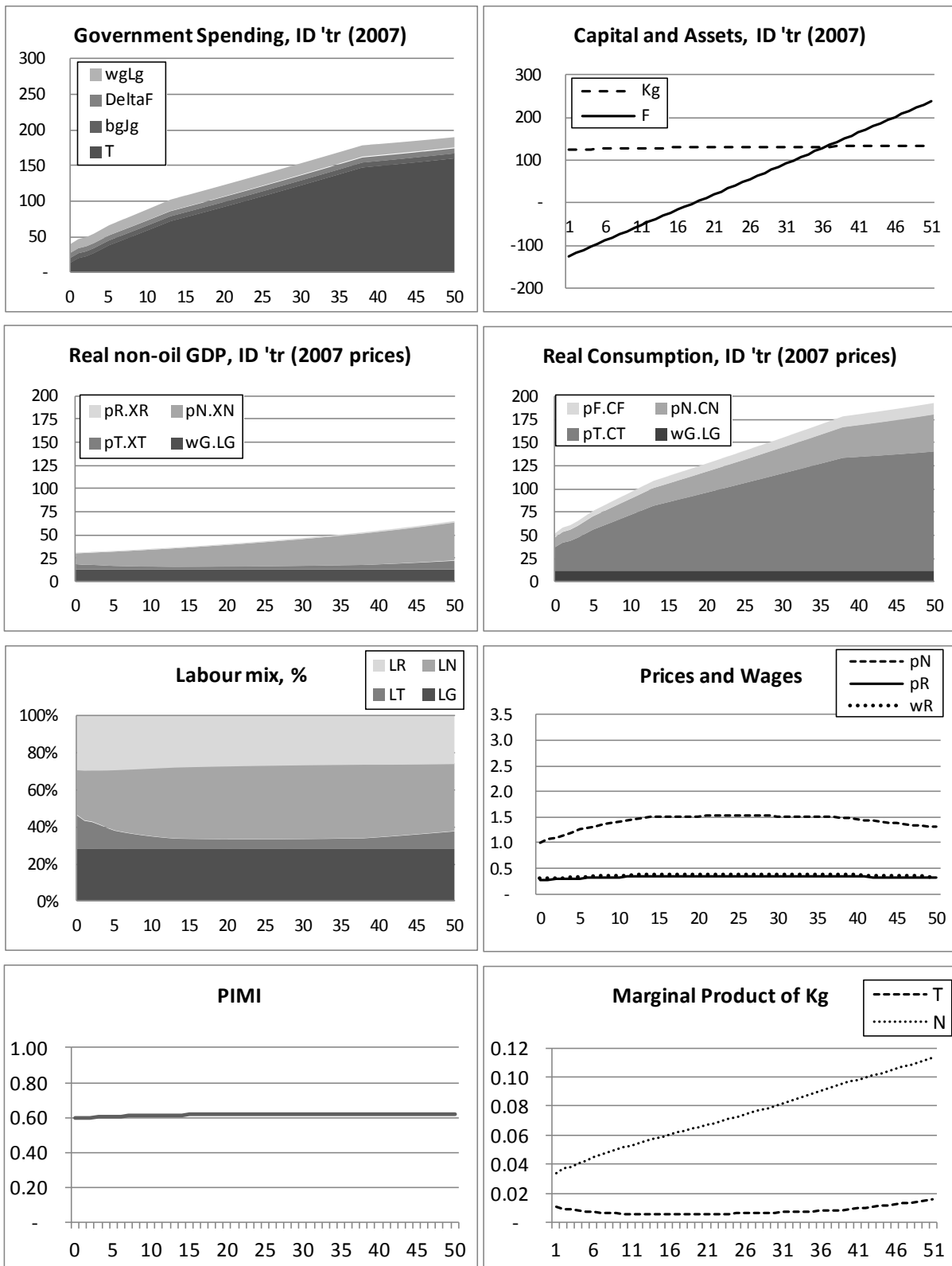
80. ***Transferring Iraq's oil windfall directly to households leads to a large boost to consumption and a small increase in output.*** This is accompanied by moderate price and wage inflation. The results of this scenario depend heavily on the assumptions that households consume all their income in the period in which it is received and that there is no private capital accumulation. If these were relaxed, then the private sector may choose to save and accumulate capital, in turn boosting output.

81. ***This scenario sees a large rise in real consumption, financed by transfers directly to households.*** The rise in real consumption is comprised mainly of imported tradable goods. The public capital stock declines as the government does not invest sufficiently in it, decreasing labor productivity in both the domestic traded and non-traded sectors. Demand for the non-traded good leads to a small rise in real consumption, but this is largely met by an increase in the goods price. The rise in consumption may be somewhat overstated, as we have assumed that households have no access to savings markets. As a result, all income earned by a household in a period is spent in that period. In reality households may choose to save some of these transfers, if only through informal means.

82. ***Output in this scenario rises modestly, and primarily in the non-traded sector.*** As the public capital stock steadily declines, labor productivity in both the traded and the non-traded sector falls. Household demand for traded goods is met by imports, and their demand for non-traded goods is met by an increase in their price and a movement of labor from the traded to the non-traded sector.

⁵ This means spending only the real return on accumulated financial assets corresponding to extracted oil wealth.

Figure 8: (iv) Using the windfall to boost government transfers



83. ***It is interesting to note that labor is drawn from the traded to the non-traded sector, even with a large and unproductive residual sector.*** In other words, the push of Dutch Disease is stronger than the pull of consumption-led growth. This can be attributed to the appreciation of the real exchange rate and relative decline in the productivity of the traded sector. In reality there may also be private capital formation, which could improve the productivity of domestic output. This scenario abstracts from such a possibility.

84. ***Finally, the transfer of the windfall directly to consumers leads to a real appreciation.*** The inability to meet demand for the non-traded good by increasing production, due to the diminishing capital stock and despite the influx of labor, causes the price of the non-traded good to rise. The price of the residual non-traded good also rises, and along with it so too do wages. As the rate of oil extraction slows towards the end of the horizon, both prices and wages begin to fall.

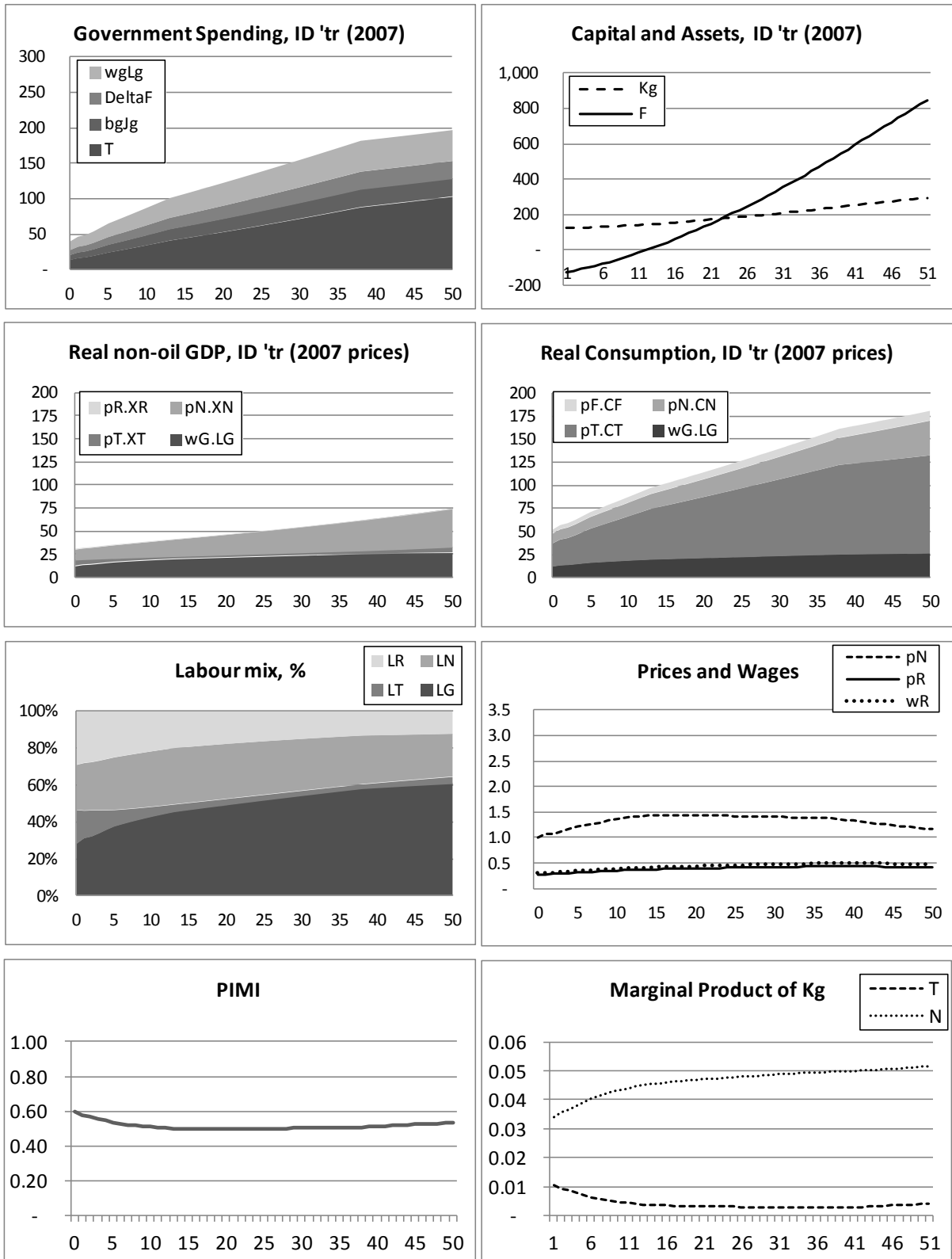
(v) Using the windfall to increase all government spending proportionally

85. ***Increasing government spending on each item proportionately leads to a moderate increase in capital and foreign assets, a large increase in real consumption, a moderate increase in real output of primarily non-traded goods, and moderate wage and price inflation.*** In this scenario the amount spent on each lever increases in proportion to its share of government spending in 2007. The amount spent on government employment is split between the wage, which is set at a constant mark-up over the agricultural wage, and the number of government employees. Transfers are used to redistribute any extra profits back to households.

86. ***Public capital accumulates at a slow rate in the scenario, for three reasons.*** First, there is a moderate increase in the price of the non-traded good. This dilutes the amount of nominal spending that is converted to real investment. Second, investment in public capital suffers from adjustment costs. The PIMI rises slightly towards the end of the horizon as the stock gets somewhat bigger. Third, public capital is depreciating at 3 percent per annum, working against the modest accumulation. Foreign assets also rise moderately, because only a small fraction of government spending is allocated to foreign savings and the real return from these assets is distributed to the government each period.

87. ***There is also a large increase in real consumption, spread across food, traded, non-traded and public goods.*** Consumption of food rises slowly, due to the way preferences for it are specified. Once the subsistence level of food is reached, households spend a relatively small proportion of each incremental dinar on it. Demand for the non-traded good rises more quickly. It is met by increased production of the good, made possible by labor moving from the traded to the non-traded sector. It is also met by a rise in the price of non-traded goods, which corresponds to an appreciation of the real exchange rate. In contrast, demand for the traded good rises very quickly. This is met largely by imports as increased demand for the traded good does not bid up its price, which is set exogenously on world markets: Dutch disease. Consumption of the good produced by the government sector rises moderately, in line with higher government employment.

Figure 9: (v) Using the windfall to increase all government spending categories proportionally



88. ***The increase in consumption is accompanied by a moderate increase in non-oil output.*** The increase in output is not shared evenly between sectors: the traded sector shrinks whilst the non-traded sector expands. Over time, the residual sector also shrinks as the increasing capital stock draws workers into more capital intensive industries. It is interesting to note that the traded sector shrinks before labor is drawn out of the residual non-traded sector. This is because the domestically produced traded good is a perfect substitute for the imported traded good. However, the residual good is imperfectly (albeit highly) substitutable with the imported food good.

89. ***Finally, prices in both the non-traded and the residual sectors rise.*** The price of non-traded goods initially rises in response to excess demand. Towards the end of the model's horizon it falls again, due to smaller increases in oil output and improved productivity. The price of the residual good rises more slowly. It follows nearly exactly the residual wage, which rises in response to increased government employment and improvements in productivity.

IV. Conclusion

90. ***The purpose of this chapter has been to evaluate a variety of fiscal policy options available for managing Iraq's windfall.*** With the formal conclusion of the US presence at the end of 2011 and slowly improving security and governance, a foundation is being laid for reconstruction and economic development. This is led in no small part by the rapid development of Iraq's oil fields and even conservative predictions suggest that the increased windfall could be transformational for the country. To put some structure on the options, the chapter developed a simple general equilibrium model that can be used by policymakers for analyzing the implications of future spending options and which allows the effects of a policy to be traced throughout the economy. This allows for a range of policies to be tested. The model is calibrated to data on the Iraqi economy in order to gain an understanding of the relative magnitudes of various effects.

91. ***The analysis finds that the most effective policy for sustainably increasing real GDP is to invest the windfall in domestic public capital and to use an offshore transitional saving or "parking" fund to reduce the losses associated with adjustment costs.*** Investment in public capital will raise labor productivity throughout the economy, lifting wages and sustainably increasing output and consumption. Using an offshore parking fund will serve to avoid the steepest phase of adjustment costs. In developing and middle-income countries such costs can claim more than 50 percent of every dollar spent on public investment. By using a parking fund, domestic capital and foreign assets can both accumulate more than would be the case without one. Finally, the fund would permit a more structured budgetary process since budget allocations would correspond more closely to what could feasibly be spent. This would boost execution rates and limit one source of volatility in budget outturns, namely the contribution of under-spending of the capital budget to overall budget balance.

92. ***The private sector offers an additional instrument for calibrating revenue flows to spending capacity.*** As discussed earlier, the model as it stands has no direct role for private capital accumulation. However, its role is implicit in the public investment management index. This is set at a low level, reflecting constraints in public expenditure management. However, relying more on private investment is a way to accumulate more capital in the short-run while public sector capacity is being built up. Thus, oil revenues could be used to leverage private sector capacity in the non-oil sector, for example through guarantee schemes (as already happens on a small scale). Of course, proper criteria for guarantees and incorporation of associated contingent liabilities into the fiscal accounts would be essential.

93. ***Nevertheless, the global experience with resource revenue funds focused on domestic investment is limited and in some respects cautionary.*** The original template for a resource fund was in the context of the smaller GCC economies where domestic projects were inherently limited in scale, making overseas saving the best option for sustaining above-the-ground wealth; the Kuwait Investment Authority Future Generations Fund is a long-standing example of this type of fund. The

small size of the national population coupled with the reservation wage effects of the resource windfall has made these countries heavily dependent on foreign labor to meet the employment needs of the non-oil sector. This has alleviated the labor market effects and absorption challenges of domestic spending, but at the cost of a skewed labor market structure with nationals working mostly in the public sector. Larger countries like Saudi Arabia and Algeria have by necessity considered a blend of foreign and domestic investment, but without a formal sovereign wealth fund; accumulated revenues are instead managed by the central bank. Neither country has been able to achieve significant diversification out of oil, but their policy frameworks in other respects have been quite different, as Saudi Arabia has pursued a more open trade and investment regime. The experience with domestic investment-oriented funds in sub-Saharan Africa, such as in Angola and Nigeria (and as envisaged for Ghana) is too recent to assess. These funds reflect a political economy that can lead to second best outcomes from a fiscal policy perspective; the need to signal that sectors or regions are getting their “fair share” can lead to earmarking, but this undercuts the principle of a unified revenue pool in the budget.

94. ***The overarching determinant of the success of the domestic investment strategy will be the integration of the public investment program with broader economic policy objectives.*** Indeed, the logic of the transitional saving fund is to allow time for this integration to be improved. The implication is that capacity development focused on public investment management (PIM) will be critical. As this is dealt with extensively in the companion public expenditure review, some brief observations can be offered here. First, the perception of revenue abundance combined with weak expenditure management systems leads a chronic risk of poorly vetted projects or an investment fund that gradually drifts to a consumption mandate (as happened for example in Kiribati). Second, even when countries have been able to tighten project implementation in a technical sense (such as through good quality engineering and feasibility studies and within-budget delivery), the public spending-led approach to diversification has a poor track record. In particular it has proven difficult to reconcile the state-centered investment approach with private sector development, yet the latter would be the driver of most economic activity in a diversified economy. As a result, the public investment program should emphasize enabling or complementary investments vis-à-vis the private sector in conjunction with a good business environment, but beyond a general commitment to infrastructure as an enabler of private sector development, investment programs are rarely this refined or selective.

95. ***Many of the ingredients needed to operationalize the transitional saving fund are being put in place.*** The building block would be a medium-term fiscal framework to provide an overall resource envelope and ministry and agency spending ceilings over a 3-5 year horizon.⁶ Such frameworks are usually top-down, but they could progress to a medium-term budget framework as the capacity for meaningful iteration on the budget between ministries and agencies and the ministry of finance improves, e.g. through the availability of sector strategies to inform the budget process. Ongoing work on the public expenditure review will provide benchmarks for spending execution rates and identify bottlenecks in public investment management. This could be combined with analysis of Ministry of Planning project data to estimate the PIM index for various sectors. The technical challenge would arise in the specification of the governance and asset allocation arrangements for the fund: how much money should go into it, who decides, and what are the criteria for release of funds? Regarding the latter, the criteria could be linked to specific audit criteria related to public financial management, which would provide an incentive for improvements. In any event, as similar decisions are already being made on a more *ad hoc* basis for the Development Fund for Iraq, a more formal structure could boost confidence in the revenue management system.

96. ***At the technical level, there is a need for capacity to construct integrated investment and oil revenue scenarios.*** This arises in particular with contingency planning for downside risk. An integrated investment scenario model would be built around the list of major projects in the energy strategy, and set up to capture their importance to the overall macroeconomic outcomes over various

⁶ In principle, the National Development Plan already provides a medium-term spending plan, but it is detached from the annual budget process.

horizons (e.g. export infrastructure, refineries, and water injection projects have very different implications for revenues and spending). This would give the government its own ability to ask questions like “if project X is delayed 2 years, what happens to the fiscal balance over the next 5 years?” and so on. Similarly, if there are some setbacks early in the energy strategy, the government may have to borrow more than it anticipated. The government should be encouraged to take an integrated view of these options: there is a sense at least from public pronouncements that financing opportunities are pursued bilaterally and based on unsystematic negotiations (e.g. a particular country gets a deal if it supplies credit and its exporters get most of the business). Instead the government may want to take a broad view of its debt management options and have an overall strategy that would then feed into what it might expect from each would-be creditor.

97. ***In any event, the obvious route to deal with the financing and capacity issues in the short-term is private sector participation.*** Of course this should be done with the risks (e.g. of contingent liabilities and crowding out of public sector capacity) in mind. There are various modes in which the private sector could be engaged (BOT, PPP etc) but precisely because of the integrated nature of the energy strategy, a project-by-project approach to deciding who does what is unlikely to be sufficient. Some oversight and coordinating role in investment management will be essential within the government; it would be useful for the Ministries of Finance, Planning, Oil, and the Prime Ministers Advisory Council to think about how to consolidate their respective capacities in this area.

Chapter 3.

Economic Diversification

I. Introduction

98. *This chapter can be seen as the “real sector” companion to Chapters 1 and 2 in that it seeks to identify the needed policies to ensure that Iraq’s non-oil economy justifies a strategy of allocating oil revenues to it.* In addition, since the spending strategy recommended in Chapter 2 does not undertake as much foreign asset accumulation as a pure sovereign wealth fund strategy would, a strong non-oil sector will be needed to ensure a high standard of living can be sustainably maintained. As Collier (2011) explains, the strategy of investing resource revenues domestically is validated when the economy achieves convergence to a high income level, which imparts a certain fragility to it: if revenues are invested domestically but income convergence fails while the resource depletes, then accumulating foreign assets would have been better.⁷

II. Potential for Diversification

99. *Iraq appears to have the ingredients for a well diversified economy, but assessment of the scope for this is clouded by the legacy of war, sanctions, and state dominance.* The key elements are as follows. First, Iraq has a much more varied geography and climate than its Gulf neighbors, which enhances the scope for agriculture and tourism. Second, the orientation of the country’s development along the rivers creates some natural population centers and clustering of activity, opening up the agglomeration benefits from cities. Thus, in the terminology of the 2009 *World Development Report*, Iraq has areas of density despite lack of development. Third, Iraq’s population of around thirty million gives room to consider various skill specializations as part of its diversification strategy, an option that would not be open to a much smaller country. Finally – and reflecting these factors – Iraq was more diversified in the relatively recent past and in particular had a solid base in education and Arab and Islamic culture.

100. *However, the cumulative effect of Iraq’s recent history – as well as the impact of decisions by its neighbors – has taken a severe toll on diversification prospects.* First, decades of environmental neglect and upstream diversion have severely degraded the potential of the rivers and the agricultural production base which depends on them. Second, in the era of war and sanctions, much of the economy’s effort was devoted to maintaining short-term crude oil production levels and ensuring essential imports, which meant that many other activities (or indeed any long-term perspective) took second place. Third, there has been a massive brain-drain. This was present throughout the 1990s as prospects at home diminished although it was also constrained by diplomatic isolation. However the 2003 war and its prolonged aftermath resulted in an exodus of skilled Iraqis, which was compounded by the blunt implementation of de-Baathification even down to the technical level in government ministries and agencies.

101. *Despite this legacy, three bases for renewed diversification can be identified: human capital, specific sectors of promise, and greater regional integration.* As explained in Section III, these are best seen as enablers of diversification but they require a considerable set of complementary inputs and policies to actually deliver such an outcome. Nevertheless, an overview of their characteristics is useful to set the stage for the focus on policies in the next section.

⁷ “Savings and Investment Decisions in Low-Income Resource-Rich Countries,” Centre for the Study of African Economies, Department of Economics, Oxford University.

a. **Human Capital**

102. *Despite Iraq's reputation as a center of excellence in education, shortfalls in educational attainment are severe.* Illiteracy for the main working age groups (between 20 and 50 years) range from 16 percent (20-29 years) to 21 percent (40-49 years) with the rate for women in general twice as high as that for men.⁸ Around 30 percent of the working age population has just elementary education, while only around 15 percent have any tertiary education (vocational or bachelors and higher). The gender disparity is mostly absent by the intermediate level, but this stands in sharp contrast to other MENA countries where levels of educational attainment for women exceed those of men as the level of education rises. Regarding the cohort arriving in the labor force, only 18 percent of the 12-19 age group have completed intermediate education and the majority of 18-21 year olds (65 percent) are not enrolled at any level. At the other end of the scale, 50 percent of the population aged 50 and above is illiterate. Thus while potential labor force quality is improving, the level is well short of what would be expected for a middle income country.

103. *The level of formal economic participation is very low.* More than half of Iraqi adults (57 percent) are outside the labor force, including a disproportionately high number of women.⁹ Only about 38 percent of adult Iraqis are employed. The low rate of adult participation in the labor force is particularly problematic. Strikingly, only 13 percent of Iraqi women are in the labor force, a far lower rate than all of Iraq's neighbors other than Saudi Arabia. According to the 2007 Household Socio-Economic Survey (which formed the basis of the poverty assessment in the poverty reduction strategy), the relatively few women who do participate in the labor force are heavily concentrated either in public sector wage jobs, notably education (non-poor, educated, primarily urban women) or at the opposite end of the spectrum in nonwage agricultural jobs (poor, less-educated, mostly rural women). The latter group corresponds to the high levels of illiteracy discussed earlier.

104. *Nonetheless, there are modest indications that Iraq's labor market performance is improving.* Recent surveys, albeit using methodologies that are different from earlier surveys, find higher levels of participation and lower unemployment. A surge in government hiring during 2011 resulted in around 300,000 new jobs; while of course the fiscal consequences of this hiring should be borne in mind, the dire state of the labor market helps put this policy into perspective. Anecdotal accounts and indirect evidence indicate that Iraq has a sizable informal sector, which has helped generate opportunities, albeit irregular ones, for some households. For example electricity generators and side activities related to the Public Distribution System provide alternative sources of income.

b. **Promising Sectors**

105. *Agriculture presents a complex opportunity for Iraq because its development will be associated with divergent needs for investment and labor.* Historical overviews of Iraq habitually cite its past role as the bread basket of the Middle East. However, the sector has been in long-term decline whose causes predate the era of war and sanctions. First, once Iraq became an oil exporter, the terms of trade shifted against agriculture – a standard response in resource-rich countries. Second, like many irrigation-based systems in the world, the consequences for sustainability of production received insufficient attention in the 1960s and 1970s when the emphasis was on expansion of physical infrastructure for water distribution, flood control, and drainage. Over time however, the impact of fertilizer use, soil salinity and poor agricultural practices took an increasing toll on production. More damagingly, the upstream countries (Turkey and Syria) have taken a rising share of river waters over the decades, a problem further compounded since the mid-2000s by regional droughts. Finally, the irrigation system was subject to general neglect from the 1980s onwards as its environmental problems multiplied, and Iraq is now a large food importer.

⁸ Figures from Iraq Socio-Economic Monitoring System 2011 education tables at http://www.iauiraq.org/documents/1680/IKN_S3_Education_en.pdf.

⁹ Figures from Iraq Socio-Economic Monitoring Survey 2011, Chapter 4. http://www.iauiraq.org/documents/1681/IKN_S4_LaborForce_en.pdf.

106. ***The sector will at best be a transitional source of employment dynamism.*** The pattern from other countries of agricultural development is clear: as the sector modernizes and expands production, it releases low productivity labor to other sectors and becomes more capital intensive. Indeed, the differential productivity of workers in low productivity traditional agriculture compared to manufacturing or services is one of the drivers of overall productivity growth. Thus while the sector currently plays an important role as a provider of employment, this has to be seen in the context of high unemployment and a stalled transition to a predominantly industry and services based economy. This switch of labor would normally unfold over the medium-term and would feature elements of “pull” (job creation in the higher productivity sectors) and “push” (as labor becomes surplus to requirements of a more mechanized agriculture).

107. ***Nonetheless, the sector can deliver two important outcomes to Iraq: acting as a bulwark for the rural sector, and setting the stage for competitiveness in one non-oil traded sector in future years.*** An agricultural rehabilitation strategy is going to involve a mix of environmental investments (such as restoration of the irrigation and drainage systems), revamped training and extension services especially focused on crop practices. These will generate localized economic activity and provide a rationale for public sector employment at the local level. Existing agricultural activities taking place through small-scale production and local distribution could be consolidated through public support for home or community based co-operative schemes, acknowledging that such schemes are likely to be relatively costly and require local social capital to be effective. The important point is that the upfront goals for such programs should be modest in terms of their overall contribution to agricultural output or jobs. Instead, their objective is take advantage of existing activities to begin tackling developmental constraints. Over time, more ambitious objectives such as the development of higher value added product niches could be put in place.

108. ***Tourism presents another potential trigger for economic development,*** building in particular on religious sites and Iraq’s climate variation. Visits to Iraq for pilgrimages have proven extremely resilient despite the vast logistical difficulties for mass movements of people, and indeed the security concerns directly associated with such visits. While this activity is concentrated in the south of the country due to the historical importance of shrines and seats of learning, there are important religious sites all over the country. Since pilgrims come from other countries on what can be a milestone visit for them, they tend to stay for some time and require typical tourism services such as transport, food, and accommodation. Scaling up to meet these needs can generate considerable activity in services such as hospitality and real estate (Box 2).

Box 2: The Dubai tourism model in Iraq

Religious tourism is a major component of overall tourism within Arab and Islamic countries and there is considerable experience in the GCC countries with developing the capabilities to meet this market. While the case of Makkah is perhaps best known outside the region – with further huge expansions of the Grand Mosque and residential areas underway – specialized service providers have been active just about anywhere where there is a significant site. An example that illustrates the opportunities and challenges provided by Iraq is that of Range Hospitality, a Dubai developer of residential facilities for pilgrims. The company is investing US\$175 million to build a hotel and residential complex for pilgrims in Karbala. At the planning stage of the project, it was clear that obtaining finance would be a major challenge. This has been solved by selling rooms “off-plan” (i.e. prior to any construction) on a time-share basis; buyers include prospective pilgrims but also tour operators and investors; in effect, the advance sales provide the working capital for the project. The off-plan sales method was commonly used in Dubai’s boom phase and it poses clear risks, not least around the question of completion. However, the project is on-target and scheduled for completion in 2013.

a. Energy Sector Strategy

109. ***Although the objective of diversification presumes a lessened dependence on the energy sector, the spillovers from the management of this sector will play a critical role in the non-oil economy.*** Over and above the linkages already discussed, two important channels can be highlighted: the role of domestic firms as vendors to the oil and gas sector, and the transmission of comparative

advantage from oil and gas abundance to energy-intensive industries. Policymakers are aware of these channels, and they come with significant risks. For example, oil and gas procurement in what is predominantly a state-owned sector may quickly become subject to favoritism or elite capture, while support for energy industries can quickly become a rationale for large implicit subsidies which do little to advance national goals (Box 3).

Box 3: Energy Subsidies Going Overseas: The Case of OMIFCO

The Oman-India Fertilizer Company (OMIFCO) is a joint venture of the state owned Oman Oil Company and two Indian companies. The company supplies fertilizer exclusively to the Indian market at a price capped by the government. Its main input is natural gas provided by Oman at a price set at US\$0.77 per million BTU, which was set in 2005 for 15 years. This price is well below even GCC comparators (at around US\$1 per million BTU), let alone global benchmarks of around US\$5. Reflecting analyses that Oman was deriving little benefit from the subsidized supply of gas (which could alternatively be exported or used for electricity generation), Oman proposed raising the price to US\$3 per million BTU. It then emerged that this would have fiscal implications for the government of India, since OMIFCO said it would not be able to supply fertilizer at the local price while covering its costs. The parties have agreed on a compromise price of US\$1.50 per million BTU. The episode illustrates how an implicit subsidy which was justified in terms of Omani industrial development was delivering most of its benefits to India.

110. ***Domestic firms will need particular types of support from the major players in the oil and gas sector to become effective suppliers to it.*** At first sight, small Iraqi firms would seem to have little prospect of direct engagement with the upstream energy sector given its need for technologically demanding inputs. However, experience from other countries shows that over time, local specialties can be built up to supply the sector. The products can range from relatively simple manufactures like pipes and construction materials to services such as facility management and shipping. Iraq is clearly at the former end of the scale for the foreseeable future but this does not preclude beginning with simple services like local hospitality and transport, which would provide a foot in the door in dealing with the large upstream companies. Practical mechanisms used in other countries for build up local vendors include grants and technical support for developing proposals, training in project identification and management, and perhaps preferential bidding terms for local firms or contractors which promise local employment content. Paradoxically, from Iraq's perspective the best experience with running these programs efficiently may lie with the international oil companies, which are used to dealing with such local mandates in other countries where they operate.

111. ***The construction industry can provide the focus for a strategy linking energy intensive industry to broader national benefits.*** Key sub-sectors within the industry are big users of energy, such as cement and steel. Iraq will have vast needs for these inputs to its reconstruction program over the coming years and given logistical difficulties, import costs will provide some tacit protection to local suppliers. Thus in principle, there is a case for a major scaling up of the domestic cement and steel industries. Furthermore, although some of the analytical debate surrounding the prospects for these industries has centered on the price they would pay for energy, this is mostly beside the point at the moment given the need for infrastructure to deliver energy to them. Fulfillment of the specific goals in Iraq's Integrated National Energy Strategy (INES) to have the means of delivery in place is therefore essential. A cost-effective construction industry in turn contributes to Iraq's need to "invest in investing" so as to ensure that domestic investments of resource revenues is warranted (see Chapter 2).

Manufacturing

112. ***While determination of underlying comparative advantage is swamped by pervasive constraints, Iraq appears to have valuable entry points in particular sectors which can be nurtured.*** Of course, the limitations of identifying sectors suitable for interventions should be acknowledged, not least for an economy with a history of severe policy distortions. Nevertheless, studies of

successful sector development usually find that there was an initial feature such as specific location or emerging specialization that formed the foundation for subsequent growth. It is a separate measure as to the mix of policy intervention and “market” factors which was able to capitalize on this foundation; this is discussed further in the next section.

113. ***The objective of diversification needs to be balanced with Iraq’s most obvious source of industrial comparative advantage in petrochemicals.*** This is already reflected in Iraq’s Integrated National Energy Strategy (INES). Although the sector is by definition closely linked to energy, it can lay the basis for a broader industrial base, for example, through production of plastics which can be used as inputs for manufacturing. Nevertheless, the oft-cited Saudi experience points to the efforts needed to be successful in this sector. There are two large government-owned players (Saudi Aramco and Sabic), both of which are professionally run outside the central government apparatus. The Saudi Arabian petrochemical strategy is focused on spatial as well as technological issues (since location of petrochemical plants is a critical decision). It has also taken a long time to build up some comparative advantage and intellectual property in the sector and move away from the basic commodities such as fertilizer where margins are tight and price volatility is high.

114. ***A product space analysis for Iraq finds – as expected – little evidence of capabilities outside the oil sector.*** Product space is a term used to describe the pattern of relatedness between products. Relatedness refers to the similarity in the inputs required by a certain activity including everything from particular skills, institutional and infrastructural requirements, and technology. A product space analysis looks for similarities in underlying capabilities needed to export different products through a formula based on revealed comparative advantage (RCA). RCA is the proportion of a particular product’s share in total country exports relative to that same share for the world as a whole.¹⁰ Figure 1 illustrates the product space for Iraq for 2007-2009 exclusively highlighting the products where Iraq has a revealed comparative advantage (RCA): 7 RCAs compared to 12 in 1992/94. The product space for 1992/94 reveals that Iraq mainly exported crude oil and refined oil products which the country has lost over the years with degrading oil infrastructure and increased domestic demand (Figure 11, dynamic illustration of the product space, red squares illustrated the disappearing products). Due to sanctions and conflict, Iraq’s industrial base has scarcely developed over the past 20 years revealing no manufacturing products in the densely connected core. Crude oil accounted for 98.8 percent of total exports over the 2007-09 period (Table 2).

¹⁰ See Hidalgo *et al* (2007).

Figure 10: Iraq 2007-09

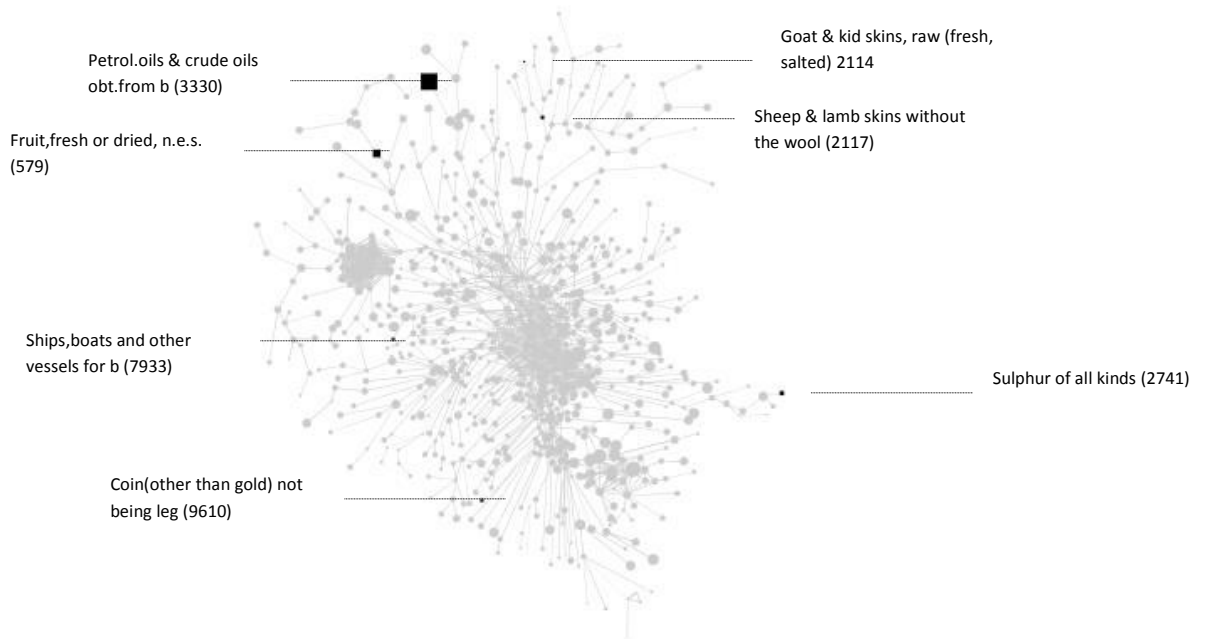
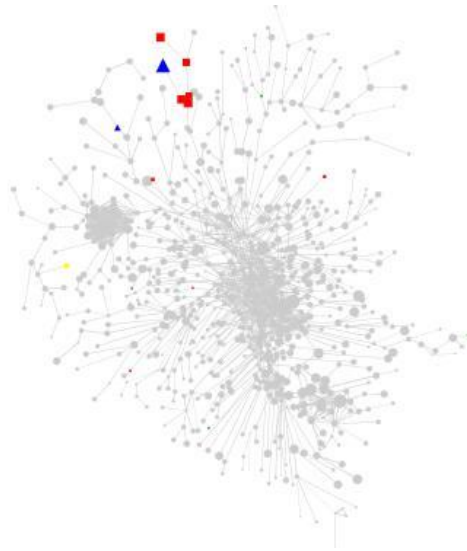


Table 2: Iraq (453 products exported in total)

Product	Export share (in percent)		
	RCA0709	RCA0709	RCAgr0709
7 RCAs and 1 product= 98.8 percent of exports			
3330 Petrol.oils & crude oils obt.from b	98.83	12.5	-0.3
9710 Gold,non-monetary	0.56	0.7	0.0
579 Fruit,fresh or dried, n.e.s.	0.18	1.0	13.7
2741 Sulphur of all kinds	0.11	4.7	17.2
5241 Fissile chemical elements and isoto	0.07	0.7	0.0
5989 Chemical products and preparations,	0.03	0.0	3.7
6821 Copper and copper alloys,refined or	0.03	0.1	243.7
5112 Cyclic hydrocarbons	0.02	0.1	0.0
3222 Other coal,whether/not pulverized,n	0.02	0.0	0.0
542 Beans,peas,lentils & other legumino	0.01	0.2	-0.4
5121 Acyclic alcohols & their halogenate	0.01	0.0	28.6
7861 Trailers & specially designed conta	0.01	0.0	337.6
2117 Sheep & lamb skins without the wool	0.01	2.7	40.7
2929 Other materials of vegetable origin	0.00	0.2	20.7
430 Barley,unmilled	0.00	0.1	-1.0
5621 Mineral or chemical fertilizers,nit	0.00	0.0	-0.7
7234 Construction and mining machinery,n	0.00	0.0	-0.3
2111 Bovine & equine hides (other than c	0.00	0.2	326.7
7638 Other sound recorders and reproduce	0.00	0.0	71.4
6924 Casks,drums,boxes of iron/steel for	0.00	0.0	22.3

Figure 11: Iraq Product Space: Dynamic Representation Changes: 1992/94-2007/09

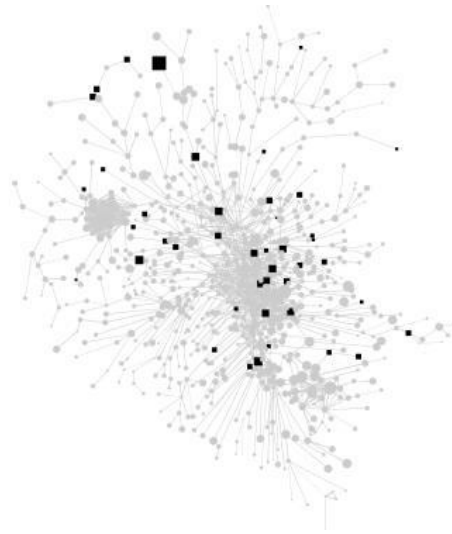


Lessons from Diversification in other Hydrocarbon Economies

115. *The product space for Norway, a commonly cited diversification success story, shows a small but high value added manufacturing base apart from its oil and gas, shipping, and fishing industries* (Figure 12). Many of the products in the core are machinery and transport equipment, chemicals as well as professional, scientific and controlling instruments and apparatus. Thus, Norway has mainly developed RCAs in sophisticated products which are used in upstream industries related to its main natural resources (i.e., oil, wood, or fishery). In particular, most of the goods in machinery & transport equipment are goods related to the oil extraction industry and shipping industry. For instance, Norway exports construction & mining machinery (7234), earth moving machinery parts (7239), hoists for raising vehicles, winches & capstans (7442), metered liquid pumps (7421) etc. Norway also exports paper articles as well as a number of worked iron & steel products such as structures (6911) and worked aluminum. In addition, it has RCAs in professional, scientific and controlling instruments and apparatus such as fluid gauges & instruments (8743), navigation/survey instruments (e.g. compasses; other navigational instruments and appliances; surveying, hydrographic, oceanographic, hydrological, meteorological or geophysical instruments and appliances; rangefinders, (8741) as well as measuring, controlling & scientific instruments (8745). Norway also developed RCAs in two chemical product classes but has not developed RCAs in plastics.

116. *The Norway product space suggests that Iraq may have potential to develop into higher value added products related to upstream sectors (e.g., industrial machinery, apparatus & equipment used in the oil sector) rather than downstream sectors (e.g., plastics or chemicals).* The product space shows that Norway has taken full advantage of its initial endowment by developing in higher value added manufacturing products related to it. Given Iraq's current human capital endowment and income level, light manufacturing or less sophisticated industrial machinery used in the oil industry (e.g., hand tools or machinery tools for working metal) might be promising industries for Iraqi producers. Moreover, the development path for Norway might also indicate that diversifying from crude oil into plastic is rather difficult despite their relatedness along the supply chain. In contrast, plastic products are often manufactured in countries with a strong industrial manufacturing base, e.g., Germany. This might suggest that the demand for plastics is driving the comparative advantage of its production location since plastic products are used as an input in many industries. Market access and low transport costs to other manufacturing industries using plastic products appears to be much more important than geographical distance to the producers of the major input, crude oil.

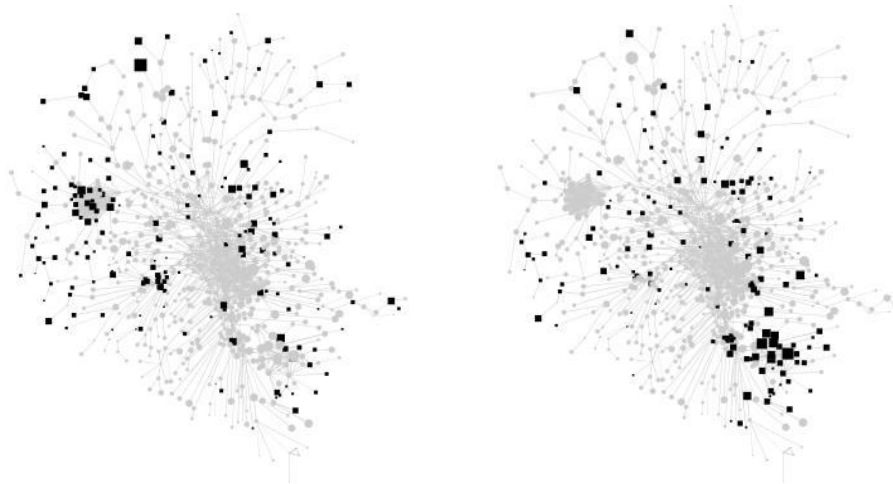
Figure 12: Norway Product Space 2007-09



117. *The product spaces for diversified non-MENA economies – Malaysia, Indonesia, Norway, or Mexico – exemplify that it is possible to develop a strong manufacturing export base in the core of the product space despite a dependence on natural resources.*

118. **Figure 13** (left graph) illustrates that Indonesia has specialized in several (higher value added) products in the core of the products space building up. That is, Indonesia developed RCAs in a few products classes closer to the core including textiles, articles of rubber & plastics, or electronics. Likewise, Malaysia (**Figure 8**, right graph), which is also an oil exporter, successfully developed manufacturing clusters in the industrial core. Finally, Mexico has specialized in electronics, car parts, and chemicals.

Figure 13: Indonesia (left) and Malaysia (right) Product Spaces 2007-09



Diversification Strategies in MENA Countries

119. *Within the MENA region, it is useful to distinguish three types of diversification strategy for the crude oil producers of the Gulf Cooperation Council (GCC) countries.* First, countries have sought to develop natural gas resources as a supplement to oil for use in domestic power generation, as a feedstock to petrochemical industry, or as an additional source of export earnings whether via pipeline or liquefaction (LNG). Second, countries with oil and gas resources have sought to expand their presence throughout the value chain for these products, moving beyond the basics of crude oil

production to complex refining and industrial strategies focused on energy-intensive industries (e.g. aluminum), petrochemicals, plastics, and even (in the case of Qatar) to control of the supply chain for LNG exports including ships and receiving terminals in the destination countries. Finally, and perhaps best corresponding to the common understanding of “diversification”, countries have supported development of non-energy sectors as sources of growth and employment for nationals.

120. ***Oil abundance plays an important role in determining the relative importance of each type of diversification in the respective countries.*** When crude oil reserves are large, the main priority has been adding refining capacity, development of gas as a substitute for domestic oil use, and an emphasis on petrochemicals. Saudi Arabia and Kuwait are in this category. Qatar and Oman have low oil reserves and thus view natural gas as the mainstay of their economies, whether used for export or domestic industry. Bahrain is already a crude oil importer and thus has given up on the notion of crude oil production alone as a source of growth. The case of the UAE is more complex because most oil reserves belong to a single emirate (Abu Dhabi); thus the other emirates have by necessity looked for non energy sources of growth, while policymakers in Abu Dhabi have long been concerned about being too exposed to volatility in the oil sector.

121. ***Besides oil reserves, GCC diversification strategies are also influenced by employment concerns.*** The core energy sector is typically highly capital-intensive and so offers limited employment prospects. This is especially so given the GCC context of completely open (but temporary) immigration of low-cost labor which has created a segmented economic structure: low cost migrant labor working in a construction and services-dominated private sector while most nationals work in high salary occupations for the government. As public sector employment is the employer of first call for many GCC nationals, their reservation wage for alternative occupations is high.

122. ***It is worth noting the major features of the policy framework within which these objectives have been pursued.*** All GCC countries operate exchange rate pegs, with 5 of the 6 in long-standing pegs to the dollar while Kuwait has a basket peg with the dollar dominating the basket. All have a dominant national operator in the oil sector but have been more open to significant foreign participation in natural gas. Oil revenue is cautiously managed; budgets are typically prepared based on a reference oil price somewhat below prevailing market prices, with “windfalls” going to a stabilization or future generations fund which is managed outside the budgetary process. As a result, public expenditure is highly inertial with funds used to smooth spending in the face of revenue fluctuations.

123. ***Traditional sovereign wealth funds have been augmented by a new generation of funds with an emphasis on diversification.*** These vehicles may be capitalized from an existing fund or an earmarked revenue flow but may also take on some debt and are given an objective linked to industrial strategy, diversification, or other policy goal of the government. Examples include Mubadala in Abu Dhabi, the Qatar Investment Authority, and various specialized investment vehicles in Oman. This illustrates an important point about economic diversification in the GCC countries: with only limited exceptions, the government plays a dominant role in its implementation. Attraction of the private sector has played a correspondingly limited role in diversification and in fact the policy framework for foreign private investors has traditionally been difficult outside a list of designated sectors, featuring requirements for majority local ownership and high corporate tax rates.

124. ***The outcomes of GCC diversification strategies are mixed.*** While natural gas offers an attractive fuel source for power or domestic industry (and thus permits a higher exportable surplus of crude oil), countries have found that exploration and extraction costs for gas are substantial – and governments have been reluctant to bear the full risks on their own. In addition, while gas offers diversification away from oil, it still leaves the country exposed to broader swings in energy prices, with the additional complication that specialized factors in gas pricing can create even higher volatility than for oil prices. Nevertheless, GCC countries continue to view natural gas as a key pillar of their diversification strategies.

125. ***Diversification into energy-intensive industry has been widely pursued by GCC countries – to the point where the similarity in strategies has put the countries in de facto competition to maintain the economic rationale of their respective plans.*** Bahrain provides a noteworthy example. It now has one of the world’s largest aluminum smelters which runs on gas-fired power and is easily the country’s largest source of non-oil exports (Bahrain refines and exports crude oil which it imports from Saudi Arabia). The underlying advantage is the ability to offer low energy prices, which can make it economical to ship raw material inputs across huge distances (e.g. bauxite coming from west Africa or Australia to the Gulf). However, the UAE also has a large aluminum sector and Saudi Arabia will bring a large integrated operation on-stream in 2014 in the new Northern Promise industrial city.

126. ***Other GCC countries have established a substantial presence in the petrochemicals industry.*** Homegrown heavy industry firms (like Saudi Arabian Basic Industries, or Sabic) are now seen as peers by the largest global players in this sector. But although these companies have successfully nurtured an elite managerial tier among nationals, their overall employment impact is small. Furthermore, the global financial crisis highlighted the cyclicity of energy-linked industry, illustrating again the challenge of achieving real diversification while remaining specialized in energy.

127. ***Finally, countries with limited or declining energy resources have looked for sources of growth outside the energy sector, with the most significant examples being financial services, logistics and communications services, tourism, and real estate.*** The general rationale has been that since the GCC is an energy-rich and rapidly growing region, there should be substantial opportunities for countries that are well positioned to meet the associated demand for services like financial intermediation, travel, and property. Bahrain and the United Arab Emirates have had the most success with this strategy, but elements of it are cited by policymakers in every GCC country.

128. ***This strategy has had some notable successes.*** Notwithstanding the effects of the financial crisis, Dubai has produced one of the world’s largest and most efficient port operators (Dubai Ports World), Bahrain has a major presence in some important financial sector niches (like Islamic finance), and several GCC-based telecom firms have expanded beyond their base to develop new markets, especially in Africa. In some cases (as in Dubai and Oman), the strategy has been implemented by majority or wholly state-owned companies while other governments have let the private sector operate within a relatively liberalized market framework (Bahrain’s financial sector and Kuwait’s telecommunications market).

129. ***However, the strategy has fared less well when viewed in terms of reduction of macroeconomic risk.*** As a result of diversification, several GCC countries ended up with heavy exposures to the financial sector and property – precisely the sectors which were hit hardest by the global crisis. Furthermore, the means of entry to these sectors was often the “mega project” – a debt-financed large scale property development with a planned cluster of banks, hotels or whatever the industry of focus was. These projects typically had high import content (both for labor and materials) and their debt-dependent financing structure left them very vulnerable to the tighter liquidity conditions of the last 4 years. Thus, after the initial boost to gross investment wears off, the long-term contribution of these projects to GDP is less clear. There remains a “missing middle”: a high value-added non-energy sector capable of providing productive job opportunities to nationals.

130. ***Outside of the GCC, Algeria provides a relevant and salutary case study.*** Diversification is a longstanding priority of the Algerian government. To this end, Algeria developed an ambitious reform agenda at the beginning of the 2000s, including the reform or privatization of state-owned enterprises, improvement of the business environment, overhaul of institutions in finance, energy, water, transport and telecommunications, and reform of the legal, land and regulatory systems. However, this reform agenda yielded little progress in the way of diversification. Non-oil growth has taken place mostly in sectors of low value added, generating unskilled, low-paying jobs. Growth has also been strong mostly in sectors that are directly linked to the public investment (like construction),

raising doubts about its sustainability beyond the investment program, and its inability to trigger a process of export diversification and private sector growth in new and competitive industries.

131. ***The reasons for these shortcomings in diversification are multifaceted: reforms which lacked follow-through and persistence, an over-reliance on public investments and poorly-functioning factor markets.*** The structural reforms born of necessity in the 1990s were difficult to sustain in the relative abundance of the 2000s. By contrast, the most persistent of economic institutions was that access to state-distributed rent remained more profitable than investments in productivity, new technology, economies of scale, or foreign market entry. Even privatization became a means of public rent distribution. One study of export diversification found that private sector lack of competitiveness feeds on and is reinforced by the rents in domestic market: distortions make the economy uncompetitive internationally, but generate enough profits to sustain the appearance of a commercially-oriented domestic sector. Compounding this, factor markets important for generating signals and incentives to the private sector do not work sufficiently well to generate an efficient allocation of productive resources. Finally, the banking sector itself (90 percent state-owned) provides few resources to the private sector and credit intermediation is underdeveloped.

132. ***Energy subsidies have proven to be a major obstacle to job creation throughout MENA.*** The irony is that such subsidies are often justified on grounds of diversification i.e. that oil or gas should be used to promote industrial development. But energy subsidies, which are common and substantive in MENA, increase the relative cost of labor in relation to the cost of energy and thereby limit labor demand. Fuel subsidies are doubly disadvantageous: They not only repress demand for labor in the short run but suppress incentives to innovate, thereby impeding productivity growth, which is the crucial determinant of long-run labor demand. They tend to disproportionately benefit older firms and SOEs, which in turn are likely to use more outdated technologies and consequently more energy. In benefitting less efficient firms, subsidies distort the demand for labor and repress market forces that would push older firms and SOEs to innovate and improve energy efficiency to remain competitive.

c. **Regional Integration**

133. ***Iraq has strong economic incentives to deepen its integration with its neighbors.*** The case for integration has a number of facets. First, integration would increase market size with beneficial effects for the efficiency of Iraq's traded goods sector and its consumers. Second, Iraq has some features of a land-locked country as its only coastal access is through the narrow waterway in the south which in turn is several hours from the open waters of the Indian Ocean. As a result, it is dependent on its neighbors for access and transit to global markets. Third, if and when Iraq is able to capitalize on its latent advantages, the scope for intra-regional trade in goods and services will increase, providing a complementary framework for economic integration.

134. ***However, the integration agenda has been stalled for over 30 years.*** In the 1980s, the Iran-Iraq war froze commercial activity on the country's lengthy eastern border. The invasion of Kuwait coupled with the survival of the Saddam regime ensured Iraq's isolation from the GCC countries, which in addition to militarizing its land borders with the GCC, cut the country off from the most obvious source of foreign capital in the region. Besides general tensions in the bilateral relationship, commercial links with Turkey have always been subject to the specifics of events in the Kurdish region, leading to practical disruptions in cross-border trade. Thus Iraq's main open lines of transport were to the west, namely Jordan and Syria. However, these border regions are sparsely populated, meaning that transit activity had little prospect of acting as a spur to growth on its own right. Furthermore, both neighboring economies are small and Syria has also been relatively isolated for a long time due to its statist economy and regional political stances.

135. ***Despite Iraq's political and security stabilization, numerous impediments remain to deeper regional integration.*** First, relations with the GCC countries remain frosty, which poses particular costs regarding Kuwait, where synergies in logistics have a strong technical rationale (e.g. scope for

shared ports, warehousing, cross-border transit). Nonetheless, economic links are growing; some FDI is coming from the Gulf, and the Gulf air carriers are now serving Iraq, providing badly needed connectivity. Second, Iraq is not a World Trade Organization (WTO) member. This means that some basic disciplines and institutional structures for trade development are absent. Third, even as Iraq emerges from diplomatic isolation, its neighbors Syria and Iran head deeper into it, which again curtails the country's economic space. Finally, the Arab economic integration agenda in general has a poor track record, as national rivalries and an inward statist orientation have hobbled technically promising initiatives.

III. Framework for Diversification

136. *This section discusses what Iraqi policymakers would view as the essential question: having identified an extensive set of constraints and some opportunities, what can policy do about it?* As discussed further below, despite the apparently daunting agenda, some key obstacles are already being addressed. There is near-complete consensus in studies of diversification that macroeconomic stability is an essential building block. In this respect, Iraq has major achievements. Thus going forward, there is space for policies more specifically targeted at diversification as opposed to those of a higher-level cross-cutting nature.

137. *State capacity – or the lack thereof – provides an overarching factor in deciding among the policy options.* The literature on successful diversification episodes has found that, *inter alia*, the quality of the technocratic layer of government is an important determinant of the outcome. It is stating the obvious to point out that for Iraq, management and technical capacity on the order of East Asia in the 1960s and 1970s or Latin America in the 1980s and 1990s cannot be assumed. Indeed, given the historic preference of Iraqi policymakers for damaging state interventions, any recommendations for new interventions – however well-intended or justified in an ideal case – face an especially high burden of proof. A logical sequence of policy recommendations therefore begins from areas of existing achievement and capacity before moving to sectors where the track record is more mixed.

b. Public resource management

138. *Management of the budget balance provides a number of important channels to facilitate diversification.* While budget deficits were inevitable due to spending needs and the time needed to restore oil production, monetary financing has been avoided because of access to the DFI; thus Iraq has successfully avoided one destructive channel from macroeconomic mismanagement to growth. With high oil prices and rising oil production, budget balances have typically turned out better than forecast. However one mechanism for these favorable out-turns is under-execution of the capital budget. This obscures the interpretation of the budget deficit and could contribute to a sense that the projected spending path is more sustainable than it actually is. From the private sector perspective, the need is simply to ensure that it has a good understanding of the government's macroeconomic stance so that its own planning can proceed with this information.

139. *Reforms to public expenditure management – as emphasized in other World Bank activities – are critical.* Broadly speaking, the public spending pattern is one of recurrent spending that is ratcheting upwards and whose effectiveness is unclear, and a capital budget suffering from chronic under-execution. As a result, the capital budget is failing to provide a clear signal to private investors about the government's intent, nor is the program delivering the specific infrastructure that the private sector expects. A significant reform program is already underway through activities of government ministries with the World Bank and other international agencies, focused on public financial management and budget preparation including linkages to the National Development Plan and the Poverty Reduction Strategy. Additional areas of focus emerging from the parallel Public Expenditure Review include public investment management and the potential for reallocation of spending between major budget lines to improve overall efficiency.

140. ***Certain elements of the public expenditure management agenda have particular importance for economic diversification.*** Specific investments that the government could support are discussed separately below; the issue here is whether the basic administrative processes associated with government spending are conducive to private sector development. Action items suggested by the experience in this regard include the following. First, simple steps like supplier payment orders can take a considerable amount of time, often due to multiple verification or audit processes that have little relevance for the substance of the transaction. Second, as noted earlier, the processing of government checks is tied to government-owned banks, a restriction that could in principle be ended through a stroke-of-the-pen action. Third, the public financial management system is very centralized, which adds delays for any dealings with the government outside Baghdad.

c. Critical Services

141. ***The urgency of the demands for improvements in security and electricity services leads to a basic paradox: a presumption of an increased role for the state in an economy where the role of the state is too large.*** Of course, a revamped Iraqi state sector will still play an important role in the economy, but in a tradition where the state was the default provider, its future role will need to be very differently aligned than in the past. For both critical sectors, the problems in assuming continued state dominance are evident. Regarding security, the risk is of violence continuing under the cover of the state through co-optation of institutions. Regarding electricity, the risk is that since state weakness is an intrinsic part of the failure to provide electricity services, operating through state mechanism will merely promote a vicious cycle of corruption, mismanagement, unmet expectations, and higher spending allocations.

142. ***An important guiding principle for public efforts regarding critical services should therefore be: First, do no harm.*** In other words, policymakers need to be able to step aside from the momentum to mount any response and ask whether the proposed response is exacerbating deep-seated problems. For the objective of diversification, two considerations in particular merit attention. Does the measure contribute to fragmentation of the economy, bearing in mind that this translates into a reduction in market size and density, with adverse productivity consequences? And does the measure increase the scope for corruption, noting that in addition to the direct costs of corruption on businesses, corruption as a sector pulls resources away from productive activities.

143. ***Some examples may illustrate the application of the principle.*** First, past experience in Iraq and from other countries may point to the usefulness of local security groups (e.g. tribal militias) as a way to compensate for the shortcomings of the national army and police. Leaving aside other problems, this strategy risks being inimical to diversification because it fragments the country. When security is delegated to localized armed groups, people will see heightened risk in travelling to other neighborhoods or villages simply because of a lack of clarity in ground rules. Regarding electricity, the government policy of supplying subsidized fuel to private generators creates new avenues for corruption (e.g. through resale of fuel). As a practical matter, determining the incidence of such subsidies is very difficult. In both cases, short-term fixes come with severe longer-run costs.

d. Non-oil Public Investment

144. ***Even with seemingly abundant revenues, the government's non-oil investment program will need selectivity on grounds of capacity and rationale.*** The traditional assumption in Iraqi policymaking was that the state would finance, implement, and own major non-oil projects. However, it does not have the capacity for such a vast program. In particular, many of the most critical investments are where the effectiveness of public capital depends on its coordination and integration with complementary investments by other public or private entities ("crowding-in"). Another way to state this is that the type of public investment for which there is the strongest economic justification – those which help realize network, scale, or coordination problems – are precisely those which the Iraqi state is least equipped to carry out. Since it is clear that identification and appraisal of garden-variety investment projects in Iraq is deficient, the obstacles for projects to be justified on the ground that the social return exceeds the private return should be obvious.

145. ***At the general level, projects which deliver cost reductions in key input sectors should receive priority.*** This is because overall rates of return will be affected by the extent to which project budgets experience high costs from purchases of equipment and materials. This is the micro-level analogue to the case for postponing some investments based on the parking fund notion outlined in Chapter 1. This approach can be phased. At first, given the necessity to import materials and equipment, transport infrastructure merits attention, but this should go beyond physical facilities like ports and roads to consider the processes like cargo handling, customs, trucking sector structure, competition, and regulation. Recognizing the import dependence, the government can undertake benchmarking and monitoring the gate delivery price of specific types of capital goods with a particular focus on equipment for the construction sector. The communications sector is a key input to many logistics services, directing attention to the capabilities of IT, telecom etc, which of course themselves need imported equipment and would benefit from the same kind of monitoring.

146. ***A front-loaded investment program – as is currently the case in Iraq’s oil and non-oil sector – should be seen as a warning sign.*** An upsurge in spending would be challenging even for a well-established public expenditure management system to bear, let alone for a system with struggles like Iraq. With the long and variable lags in spending policy, the government could have adapted itself in size to the highest level of spending long after this level of spending was actually warranted. Most of the experience with managing spending volatility suggests the usefulness of caps on spending growth (and decline), precisely to keep spending within the range of current capacity and to avoid stop-start cycles on critical projects. This suggests the possibility of re-phasing the investment to reflect the capacity constraints, with the parking fund outlined in Chapter 2 used for smoothing.

147. ***The government would benefit from an integrated investment scenario model which could be used to prioritize projects.*** The model would be built around the list of major projects in the National Development Plan, and set up to capture their importance to the overall plan outcomes. The idea is that the government could improve its own ability to ask questions like “if this project is delayed 2 years, what happens to the various plan outcomes, the fiscal balance etc.” While clearly ambitious, a RMSM model enriched with an investment programming module could deliver this functionality.

148. ***One method of dealing with the financing and capacity issues in the short-term investment program is private sector participation.*** Of course this should be done with the risks (e.g. of contingent liabilities and crowding out of public sector capacity) in mind. There are various modes in which the private sector could be engaged (BOT, PPP etc) but precisely because of the integrated nature of Iraq’s reconstruction, a project-by-project approach to deciding who does what is unlikely to be sufficient. Some oversight and coordinating role in investment management will be essential within the government; it would be useful for the Ministries of Finance, Planning, Oil, and Industries and Minerals to think about how to consolidate their respective capacities in this area.

149. ***Successful diversification episodes, albeit limited in nature, point to the importance of a package of investment and capacity building for the non-oil traded sector.*** As Gelb and Grasman (2010) explain, this appears to be a key element diversification in Chile, Norway, and Indonesia.¹¹ The specifics of each case are different. For Chile, the government encouraged technical product development and adaptation, dissemination of international standards, provision of targeted infrastructure, and support for groups to coordinate producers through joint public-private associations. Indonesia followed a heterodox policy mix, where for example domestic production of fertilizer was used to supply cheap fertilizer to agriculture even though the export price would have been higher. And despite protectionist leanings, Malaysia maintained a mostly open trade regime in the 1960s and 1970s, which allowed its manufactured export sector to emerge. Norway had already established a foothold in various sectors before oil and gas came on stream, which ensured that there was a political constituency to preserve comparative advantage in these sectors. As Gelb and Grasman

¹¹ “How should Oil Exports Spend Their Rents?” Center for Global Development Working Paper 221

emphasize, the more general issue here is the need for a political base for the traded sector, to combat the rent-seeking interests that will quickly emerge as a resource boom takes hold.

e. SOE restructuring

150. *Iraq's SOE sector faces a restructuring agenda on a par with that experienced by the former communist countries of eastern Europe and central Asia in the 1990s.* Within the general framework of the need put the sector on a commercial footing, some priorities for the diversification objective can be mentioned. First, for most of the non-oil sector, there will be no obvious justification for state ownership or operation of commercial activities; in this sense, the state will not be a direct player in the achievement of a diversified economic base. Second, an abrupt transition to private ownership will not be feasible given the scale of the restructuring task.

151. *Privatization of Iraq's SOEs – especially SOEs involved in the tradable goods supply chain – is therefore urgent.* Retrenchment of excess staff at SOEs is a legitimate concern, but can be managed. Available data suggest that around 40 percent of the estimated 633,000 workers at Iraq's SOEs are redundant. In Iraq's context it is likely to be a matter of policy to avoid involuntary retrenchments in the course of privatization. As a result, some fiscal cost is inevitable to induce voluntary attrition. However, if done right, indirect job gains elsewhere from a more efficient SOE sector can generate additional jobs and ease the task of labor reallocation.

152. *The objectives for privatization sales transactions should be clearly identified and prioritized at the start of the process, in order to highlight tradeoffs and guide the preparation and conduct of the sale.* While emphases have varied from country to country, sales objectives have commonly included the following: (i) fiscal gains from sales proceeds, increased corporate taxes, and discontinuation of subsidies; (ii) increased investment, from foreign and domestic sources; (iii) competitiveness gains, from improvements in enterprise efficiency and performance; and (iv) support for capital market development, through public share offerings. Under Iraq's present circumstances, it seems most appropriate to emphasize increased investment and competitiveness gains, which contribute directly to the diversification objective.

153. *The presence of SOEs in the construction industry provides another reason to prioritize this sector.* Although some of these SOEs need to demonstrate viability and present significant environmental issues (through their overuse of fragile inputs and pollution), they have reasonable potential for employment generation and more efficient production of these goods in Iraq would lessen the dependence on the supply chain problems arising from the aforementioned issues. This sector could be used as a pilot for sector-based partnerships that would focus on key prerequisites for effective private sector participation in these industries (e.g. a joint government-industry group for construction focused on standards, certification, and compliance). At the very least it is essential that the presence of SOEs does not become a reason to restrict entry of viable private sector competitors.

f. Investment Climate Reform

154. *A detailed set of recommendations regarding the investment climate has been set out in the ICA; the challenge will be prioritization.* These address all the key obstacles found in the ICA: access to financial services and infrastructure, functioning of land and labor markets, SOE reform, corruption, and the informal sector. Inevitably the associated recommendations are wide-ranging and some would need on the order of 10 years for their impact (e.g. improving the skills orientation of the education system). As in other experiences with large reform agendas, so-called “quick-wins” are valuable not so much for the direct impact of such reforms but because they can build institutional momentum around the broader reform agenda. For example, such reforms can serve as a signal to the private sector of government commitment and in practical terms the reforms can draw media attention (e.g. through Doing Business improvements) which helps validate the case for reform.

155. *Improved dialogue with the private sector will be critical to the identification and implementation of priority reforms.* To this end, the World Bank is supporting the establishment of a

new business group in Iraq, the Private Sector Development Center (PSDC). This group is registered as an NGO in Iraq and seeks to better coordinate existing business associations in Iraq, identify high priority areas for reform to support the private sector and undertake professional outreach to the Government of Iraq, KRG and key stakeholders.

Monetary Policy

156. ***Monetary policy has contributed significantly to macroeconomic stability, but limits to the exchange rate-based stabilization have been reached.*** As occurred in many transition and post-conflict economies, the country experienced high and volatile inflation in the years after 2003. However through the imposition of an exchange rate peg to the dollar and increasingly effective liquidity operations by the Central Bank, inflation has been stabilized in the single digits (around 6 percent) and the peg is supported by high reserves; this should be seen in a context where dollarization – whether wanted or not – was a serious possibility in the immediate post-invasion years. However, since liquidity management relies heavily on cash operations (due to the poorly developed banking system), the system is still subject to volatility arising from fluctuations in dollar demand. This problem has worsened with an apparent outflow of dollars to Syria and Iran, but the underlying issue is a lack of depth in payment systems and a perceived fragility in the level of the exchange rate. From the perspective of firms, there can few more basic concerns than wondering it will have the access to its own funds to complete a transaction, yet firms do not have this certainty now. Indeed, the squeeze on access to dollars implies a shadow interest rate which is much more volatile than CBI's formal policy rate.

157. ***While the Central Bank has focused on major monetary interventions like the level of the peg and re-denominating the currency, there is a need to reduce administrative complexity of the monetary system.*** Because the units of the Iraqi dinar reflect the cumulative effect of past inflation, CBI has understandably focused on a currency reform which would reestablish a rough parity of the currency unit with the dollar through eliminating of three zeroes. However, the complexities of a currency changeover are substantial, extending not just to the physical currency but also to the IT systems which rely upon it, and Iraqi policymakers have come to doubt of the wisdom of the plan. In fact, the experience of high inflation countries is that households and businesses can adjust quite quickly to debased units, and indeed Iraqis can already operate on an “as-if” basis regarding the three zeroes. The problems with dollar auctions discussed earlier highlight a different problem, namely the administrative hurdles for access to foreign currency. The dollar still functions as a second medium of exchange in Iraq, and this demand gets channeled to CBI through currency traders who are the main financial intermediary for many households. This makes the entire system very cash-intensive and thus very vulnerable at the key choke-point, where is where CBI deals with the traders. Yet CBI's recent tendency has been to add new administrative requirements to these transactions. It would be better to shift transactions into the banking system where a modern payment and settlement system and a wholesale liquidity management model could be applied.

IV. Conclusion

158. ***This section provides guidance to policymakers on actionable measures suggested by the joint focus on revenue management and diversification.*** With the growing base of Bank analytical work on fiscal policy in Iraq, there can now be a joint program with the government of operationalizing the findings. Along with this phase of the CEM, related fiscal work includes the Public Expenditure Review, the Budget Strategy, and the public financial management project. Broader policy dialogue is supported by the Investment Climate Assessment, the ongoing work on private sector development in Iraq, and the supervision work on the preparation of the Integrated National Energy Strategy. Together these activities provide a substantive reform agenda.

159. ***Iraq should avoid an over-ambitious move to a full-fledged fiscal rule.*** The Chapter 2 model's recommendations for fiscal policy are not and should not be considered a fiscal rule.

International experience shows the enormous difficulties that oil exporters with more developed institutions than Iraq have had in designing and implementing fiscal rules. They face situations much more complex than other countries in this regard, essentially due to the volatility of oil revenue, poor PFM systems, and the difficult political economy of spending large rents. This will unfold in a context of profound structural changes that can be expected to occur in the Iraqi economy in the medium-term – privatization, SOE restructuring, a greater drive for efficiency, reallocation of productive resources and factors of production, changes in internal relative prices, technological changes, the incorporation of more women in the labor force, and perhaps the strong development of the nonoil sector. The notion of a rigid fiscal rule binding government in a situation of such large structural change, superimposed on oil volatility, is unrealistic.

160. ***A substantive fiscal work program should instead complement existing work on budget formulation and implementation.*** The government will need flexibility to respond to unfolding and unpredictable events in an appropriate manner – within the framework of strengthened existing systems. This suggests a focus on key functions of fiscal policy formulation and implementation: a medium-term fiscal framework, a debt management strategy beginning with comprehensive public debt information, and of course a strong PFM system. The objective is to provide the core elements of an effective budgetary process: the overall fiscal envelope, the estimation of the expenditure envelopes for operating and investment, derived from the top-down, and in a timely fashion to be usable during budget preparation. The fractured state of government finances, with off-budget loans and advances, un-budgeted carryovers, varying treatments of letters of credit and non-monetized payments-in-kind, combine to make the task of accurate, comprehensive and transparent budget preparation difficult.

161. ***The macroeconomic implications of the investment surge linked to oil output should be incorporated in overall economic management.*** Much of investment will be imported machinery, equipment and specialized labor, but experience shows that investment to expand production can require a heavy domestic component, especially construction services and qualified national personnel. As is already the case, the local construction and ancillary sectors are under severe pressure, and bottlenecks and price increases will arise. Iraq is in a situation where investment plans to expand hydrocarbon capacity co-exist with an expansionary *non-oil* fiscal policy, which risks inflationary pressures and the real appreciation of the dinar.

162. ***Conditions to ensure beneficial spillovers of technology, capacity, and market development from the oil and gas industry require urgent attention.*** Three issues stand out. First, the skills shortages that inhibit the development of local supply chains and downstream industry could be addressed in terms of specific partnership strategies between companies and relevant tertiary level education institutions. Second, given the challenging circumstances in terms of business climate and access to finance, land, and adequate infrastructure, special “diversification clusters” might be considered for firms related to the oil sector. Cluster-based industrial development would, if well implemented, permit rapid implementation of improved regulatory and financial framework within the clusters, as well as provide appropriate infrastructure and access to land. Third, local content requirements may – with the proviso of careful design – have a role in Iraq. This need not be enshrined in legislation but could be one consideration in hydrocarbon bidding rounds, field development plans, and the corporate tax system (e.g. deductibility of certain expenses). A number of international consultancies are now active in advising oil and gas companies on setting up local value chains. However, successful local content development depends on addressing productively the above mentioned issues: capacity building, business environment, infrastructure and finance, to enable domestic SMEs to respond to increased demand with products that satisfy quality requirements.

163. ***To design appropriate jobs policies for skills upgrading and capacity building, a good point of departure would be a joint government-industry analysis of supply and demand of key skills needed.*** The objective would be to chart skills gaps and deficits for domestic participation in oil exploration and extraction, and the skills deficits holding back the emergence of local supply chains related to the oil sector. Capacity building would need to address gaps in tertiary level education, as

well as firm-level technology transfer. Using Norway as an example, international petroleum companies were, in the early phase of oil extraction, encouraged to enter cooperative agreements with research units at national universities, resulting in the upgrading of oil sector-specific skills among academic staff, and degree programs tailored to the oil sector and related sectors. The policy was characterized by a well-articulated system of evaluating operator contributions to domestic capacity building. Financial support for research and development (R&D) was rewarded and transfer of know-how along with financial support was rated even more highly. Similar policies were active at the firm level, encouraging the integration of domestic firms and enterprises into large development projects undertaken by the multinational oil companies.

164. ***The state should act within its role in energy sector coordination and cluster development.*** The development of local supply chains is likely to be sub-optimal under pure market conditions due to lack of cooperation between companies and high initial investments. Whereas it may not be profitable for a single company to develop local supply chains, it may be so for the sector as a whole, and there is hence a coordinating role for the state. Assuming technology spillovers from technically upgraded domestic oil and related sectors, there would be justification for providing temporary special regulatory and financial regimes in “diversification clusters”, allowing technology firms related to the oil sector to develop in a business climate more favorable than that of the nation as a whole. Location advantages would favor domestic over foreign firms as long they were able to operate at a comparable technological level.

165. ***The main challenge of local content criteria is to avoid increasing opportunities for corruption, maintain competitive markets and minimize distortions.*** Norway did this by fomenting competition among three separate domestic oil companies, and by encouraging entrance of foreign companies that were willing to contribute to the development of Norwegian domestic capacity and provide employment. Related to this is the need to generate domestic firms with sufficient technical and institutional capacity for an effective supply response to the activities of the oil and gas companies. Building local content capabilities takes time and requires significant initial investment in human resources and firm capacity development. During the development of Norwegian off shore oil fields in the 1970s, the government deliberately slowed down the speed of concessioning to let Norwegian industry catch up with the technology requirements in the oil sector. A similar principle may be relevant to the phasing of oil and gas production plans under INES.

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Annex I: Selected Macroeconomic Indicators

	2008	2009	2010e	2011e	2012p	2013p	2014p	2015p
Economic growth and prices								
Nominal GDP (US\$ billion)	86.5	64.2	81.1	115.4	144.2	164.6	168.1	182.4
Real GDP (% change)	9.5	4.2	0.8	9.9	11.1	13.5	11.0	8.5
<i>of which non-oil GDP (% change)</i>	5.4	4.0	4.5	5.0	5.5	5.5	5.5	6.0
GDP per capita (US dollars)	2,845	2,056	2,531	3,513	4,288	4,785	4,779	5,079
Oil production (million bpd)	2.29	2.38	2.35	2.66	3.05	3.6	4.1	4.5
Oil exports (million bpd)	1.82	1.88	1.85	2.04	2.4	2.9	3.3	3.7
Consumer price index (% change)	6.8	-4.4	3.3	6.0	7.0	6.0	4.5	4.0
National Accounts								
Gross domestic investment	33.4	29.3	29.4	24.5	28.7	26.4	27.7	28.3
of which public	31.4	25.6	25.4	20.3	24.5	22.3	22.5	22.7
Gross domestic consumption	49.4	90.2	73.0	63.1	58.5	59.0	58.3	57.1
of which general government	36.2	60.2	42.0	34.0	33.5	31.5	32.2	30.8
Gross national savings	52.5	15.5	27.7	32.3	37.8	37.1	37.8	39.0
of which public	30.1	-0.9	16.3	27.7	25.3	29.7	29.1	32.1
Fiscal and oil sector accounts								
Revenues and grants	85.8	80.3	75.6	77.2	73.8	74.5	73.8	74.8
of which oil revenues ¹	71.6	60.7	61.7	69.0	68.5	69.5	68.1	70.6
Expenditures	87.1	102.4	84.7	69.8	73.6	67.7	67.9	69.7
Operating expenditures	55.7	80.6	59.2	49.5	49.1	45.4	45.4	45.6
Capital expenditures	31.4	25.6	25.4	20.3	24.5	22.3	22.5	24.1
Overall fiscal balance (including grants)	-1.3	-22.1	-9.1	7.4	0.2	6.8	5.8	5.0
Balance of Payments								
Current account balance	19.2	-13.8	-1.8	7.9	9.1	10.7	10.1	10.6
Trade balance	24.5	-9.5	6.3	19.7	19.8	21.8	21.2	22.2
Merchandise exports	71.7	59.8	62.6	67.7	69.5	71.1	70.7	72.1
<i>of which oil (in percent of total exports)</i>	98.6	99.5	98.5	98.4	97.8	96.4	95.5	95.6
Merchandise imports	47.2	69.3	56.3	48.0	49.7	49.3	49.5	50.0
External Public Debt								
Estimated Debt Stock (US\$ billion)	95.6	99.7	87.2	88.7	30.8	28.5	26.4	25.3
<i>(in percent of GDP)</i>	110.5	137.9	106.7	37.1	32.6	26.0	22.9	21.2
<i>(in percent of exports)</i>	150.4	221.2	165.8	56.6	48.8	37.7	32.7	30.1
Memorandum Items								
Iraqi oil price (US\$ per barrel)	91.5	55.6	74.2	103.6	112.7	108	94.3	91.8
Gross Reserves (US\$ billion)	50.2	44.3	50.6	61.1	71.7	79.7	89.5	..
<i>Gross reserves in months of imports</i>	11.3	9.6	9.1	8.6	8.9	9.6	9.8	..
Primary fiscal balance (in percent of GDP)	-0.8	-21.6	-8.3	0.8	0.1	2.7	4.1	6.0
Exchange rate, ID per US\$1 (period average)	1,193	1,170	1,170	1,170	..	..	..	..

Source: Iraq authorities; and IMF staff estimates and projections.

(1) Including revenues of oil-related public enterprises.

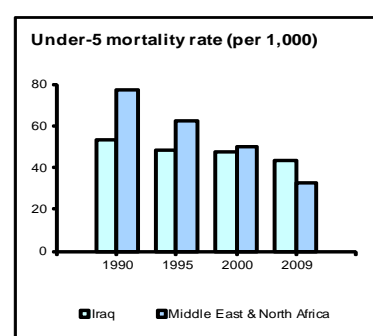
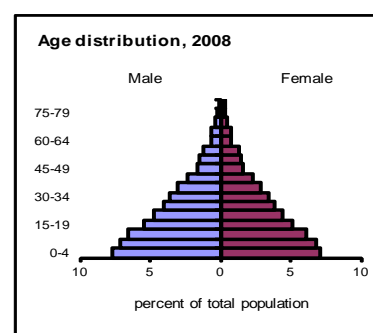
Note: APSP (average petroleum spot price) is a simple average of UK Brent, Dubai, and West Texas Intermediate spot prices reflecting world exports of light, medium, and heavy crude oil.

Annex II

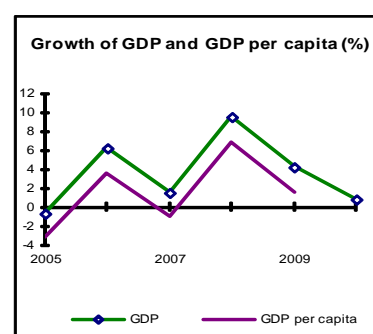
Iraq at a glance

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Key Development Indicators (most recent 2010)	Iraq	M. East & North Africa	Lower middle income
Population, mid-year (millions)	32.3	331	3,811
Surface area (thousand sq. km)	435	8,778	31,923
Population growth (%)	2.5	18	12
Urban population (% of total population)	66.4	58	41
GNI (Atlas method, US\$ billions)	75	1,190	8,825
GNI per capita (Atlas method, US\$)	2,340	3,597	2,316
GNI per capita (PPP, international \$)	3,370	7,911	4,789
GDP growth (%)	0.8	3.4	6.8
GDP per capita growth (%)	23.1	16	5.6
(most recent estimate, 2003–2009)			
Poverty headcount ratio at \$125 a day (PPP, %)	..	4	..
Poverty headcount ratio at \$2.00 a day (PPP, %)	23 ^a	17	..
Life expectancy at birth (years)	68	71	68
Infant mortality (per 1,000 live births)	35	27	43
Child malnutrition (% of children under 5)	7	12	25
Adult literacy, male (% of ages 15 and older)	86	82	87
Adult literacy, female (% of ages 15 and older)	69	65	73
Gross primary enrollment, male (% of age group)	106	106	109
Gross primary enrollment, female (% of age group)	89	104	105
Access to an improved water source (% of population)	79	87	86
Access to improved sanitation facilities (% of population)	73	84	50



Net Aid Flows	1980	1990	2000	2010
<i>(US\$ millions)</i>				
Net ODA and official aid	11	63	100	2,791
<i>Top 3 donors (in 2009):</i>				
United States	..	..	..	2,346
European Commission	..	..	..	57
Australia	..	..	..	52
Aid (% of GNI)	0.02	0.12	..	11.9
Aid per capita (US\$)	0.81	3.34	3.96	321.7
Long-Term Economic Trends				
Consumer prices (annual % change)	..	..	..	3.3
GDP implicit deflator (annual % change)	..	..	47.4	-28.4
Exchange rate (annual average, local per US\$)	0.3	0.31	1930	1170
Terms of trade index (2000 = 100)	..	..	100	141
Population, mid-year (millions)	14.1	18.9	25.1	32.3
GDP (US\$ millions)	47,562	48,422	25,857	81,112
<i>(% of GDP)</i>				
Agriculture	..	..	5.4	8.6
Industry	..	..	84.4	70.1
Manufacturing	..	..	0.9	17.0
Services	..	..	10.3	21.3
Household final consumption expenditure	..	..	..	46
General gov't final consumption expenditure	..	..	..	42
Gross capital formation	..	..	..	29
Exports of goods	..	..	..	62.6
Imports of goods	..	..	..	56.3
Gross savings	..	..	..	27.7



1980–90 1990–2000 2000–10
(average annual growth %)

Population, mid-year (millions)	14.1	18.9	25.1	32.3	3.4	3.3	3.2
GDP (US\$ millions)	47,562	48,422	25,857	81,112	0.2	-4.7	21.4
<i>(% of GDP)</i>							
Agriculture	..	..	5.4	8.6	..	..	6.6
Industry	..	..	84.4	70.1	..	..	-1.9
Manufacturing	..	..	0.9	17.0	..	..	198.8
Services	..	..	10.3	21.3	..	..	11.9
Household final consumption expenditure	..	..	..	46	..	..	..
General gov't final consumption expenditure	..	..	..	42	..	..	..
Gross capital formation	..	..	..	29	..	..	..
Exports of goods	..	..	..	62.6	..	..	..
Imports of goods	..	..	..	56.3	..	..	..
Gross savings	..	..	..	27.7	..	..	..

Note: Figures in italics are for years other than those specified. 2009 data are preliminary. .. indicates data are not available.

a. Data from Iraq Poverty Report.

Development Economics, Development Data Group (DECDG).

Balance of Payments and Trade 2010 2011 (est)*(US\$ millions)*

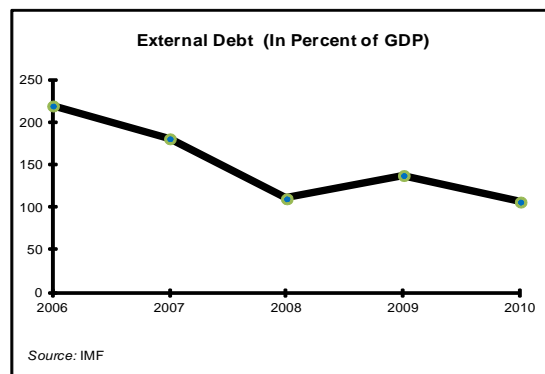
Total merchandise exports (fob)	50,753	78,122
Total merchandise imports (cif)	45,644	55,379
Net trade in goods and services	5,109	22,743
Current account balance as a % of GDP	-1.422	9.071
	-1.8	7.9
Workers' remittances and compensation of employees (receipts)	..	..
Reserves, including gold	50,632	61,064

Central Government Finance*(% of GDP)*

Current revenue (including grants)	75.6	77.2
Tax revenue	16	13
Current expenditure	59.2	49.5
Overall surplus/deficit	-9.1	7.4
Highest marginal tax rate (%)		
Individual	..	..
Corporate	..	..

External Debt and Resource Flows*(US\$ millions)*

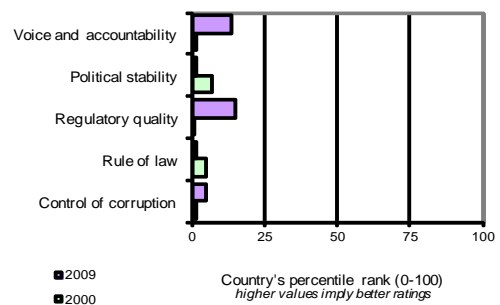
Total debt outstanding and disbursed	97,000	47,200
Total debt service	..	..
Debt relief (HIPC, MDR)	-	-
Total debt (% of GDP)	106.7	37.1
Total debt service (% of exports)	165.8	56.6
Foreign direct investment (net inflows)	1,271	2,095
Portfolio equity (net inflows)	..	..

**Private Sector Development** 2000 2011

Time required to start a business (days)	-	77
Cost to start a business (% of GNI per capita)	-	115.7
Time required to register property (days)	-	51

Ranked as a major constraint to business (% of managers surveyed who agreed)	2000	2011
n.a.	..	..
n.a.	..	..

Stock market capitalization (% of GDP)	..	..
Bank capital to asset ratio (%)	..	..

Governance indicators, 2000 and 2010

Source: Kaufmann-Kraay-Mastruzzi, World Bank

Technology and Infrastructure 2000 2010

Paved roads (% of total)	84.3	..
Fixed line and mobile phone subscribers (per 100 people)	3	80
High technology exports (% of manufactured exports)	..	0.1

Environment

Agricultural land (% of land area)	21	20
Forest area (% of land area)	19	19
Nationally protected areas (% of land area)	..	0.1
Freshwater resources per capita (cu. meters)	1,333	1,132
Freshwater withdrawal (billion cubic meters)	66.0	..
CO2 emissions per capita (mt)	3.0	3.3
GDP per unit of energy use (2005 PPP \$ per kg of oil equivalent)	4.4	3.2
Energy use per capita (kg of oil equivalent)	1,011	1,034

World Bank Group portfolio 2000 2011^b*(US\$ millions)*

IBRD		
Total debt outstanding and disbursed	-	250
Disbursements	-	250
Principal repayments	-	0
Interest payments	-	0
IDA		
Total debt outstanding and disbursed	-	508
Disbursements	-	150
Total debt service	-	0
IFC (fiscal year)		
Total disbursed and outstanding portfolio of which IFC own account	-	15.9
Disbursements for IFC own account	-	15.9
Portfolio sales, prepayments and repayments for IFC own account	-	0
MIGA		
Gross exposure	-	5
New guarantees	-	5

Note: Figures in italics are for years other than those specified. 2009 data are preliminary.

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.. indicates data are not available. - indicates observation is not applicable.

b. As of March 22nd, 2012

Development Economics, Development Data Group (DECDG).

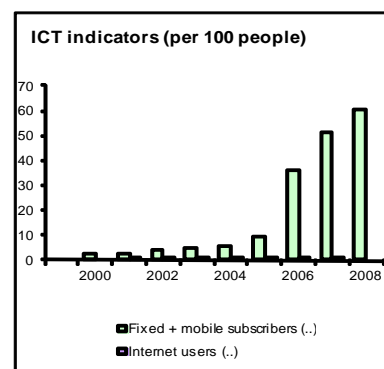
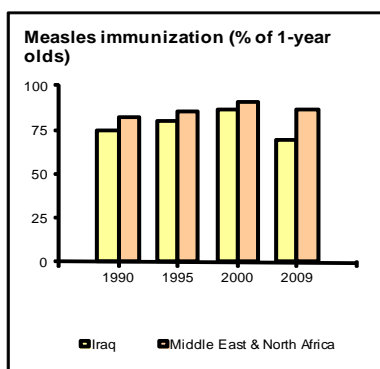
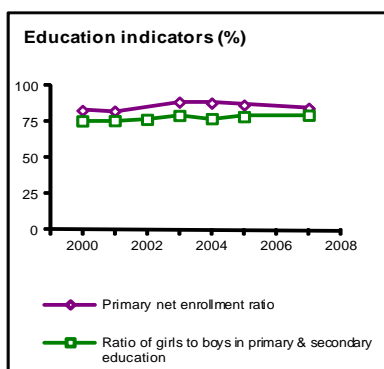
Millennium Development Goals

Iraq

With selected targets to achieve between 1990 and 2015

(estimate closest to date shown, +/- 2 years)

	Iraq			
	1990	1995	2000	2010
Goal 1: halve the rates for extreme poverty and malnutrition				
Poverty headcount ratio at \$ 125 a day (PPP, % of population)	..	..	..	..
Poverty headcount ratio at national poverty line (% of population)	..	..	..	..
Share of income or consumption to the poorest quintile (%)	..	..	..	..
Prevalence of malnutrition (% of children under 5)	119	22.6	15.9	..
Goal 2: ensure that children are able to complete primary schooling				
Primary school enrollment (net, %)	76	74	86	..
Primary completion rate (% of relevant age group)	58	..	55	..
Secondary school enrollment (gross, %)	40	38	37	..
Youth literacy rate (% of people ages 15-24)	..	..	85	83
Goal 3: eliminate gender disparity in education and empower women				
Ratio of girls to boys in primary and secondary education (%)	79	79	77	..
Women employed in the nonagricultural sector (% of nonagricultural employment)	..	..	16	21
Proportion of seats held by women in national parliament (%)	11	..	6	25
Goal 4: reduce under-5 mortality by two-thirds				
Under-5 mortality rate (per 1,000)	53	48	48	39
Infant mortality rate (per 1,000 live births)	42	39	38	31
Measles immunization (proportion of one-year olds immunized, %)	75	80	87	73
Goal 5: reduce maternal mortality by three-fourths				
Maternal mortality ratio (modeled estimate, per 100,000 live births)	93	94	84	75
Births attended by skilled health staff (% of total)	54	..	72	..
Contraceptive prevalence (% of women ages 15-49)	14	..	44	..
Goal 6: halt and begin to reverse the spread of HIV/AIDS and other major diseases				
Prevalence of HIV (% of population ages 15-49)	..	..	..	..
Incidence of tuberculosis (per 100,000 people)	64	64	64	64
Tuberculosis cases detected under DOTS (%)	130	72	62	48
Goal 7: halve the proportion of people without sustainable access to basic needs				
Access to an improved water source (% of population)	81	80	80	79
Access to improved sanitation facilities (% of population)	..	67	69	73
Forest area (% of total land area)	18	19	19	19
Nationally protected areas (% of total land area)	0.1	0.1	0.1	0.1
CO2 emissions (metric tons per capita)	2.9	3.7	3.0	3.0
GDP per unit of energy use (constant 2005 PPP \$ per kg of oil equivalent)	..	..	4.4	..
Goal 8: develop a global partnership for development				
Telephone mainlines (per 100 people)	3.9	3.0	2.7	5.0
Mobile phone subscribers (per 100 people)	0.0	0.0	0.0	75.0
Internet users (per 100 people)	..	..	0.1	2.5
Personal computers (per 100 people)	..	..	0.8	..



Note: Figures in italics are for years other than those specified. .. indicates data are not available.

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Development Economics, Development Data Group (DECDG).

Appendix I: A General Equilibrium Model of Iraq

This Appendix outlines formally the general equilibrium model of the Iraq economy used in the analysis. The model has five components: the oil sector, the government sector, the private sector, the labor market and household consumption. Changes in oil income or fiscal policy influence the remaining sectors in general equilibrium. The model is then calibrated to data on the Iraq economy, as described in Appendix B.

a. The Oil Sector

Oil is treated as an exogenous windfall N , accruing directly to the government. It increases steadily over time, in accordance with the average of a number of projections.

b. The Government Sector and Fiscal Policy

Government controls public employment L_G , the public wage w_G , transfers T , public investment J_G and foreign assets in the next period F_{t+1} . The government budget constraint is given by:

$$\Delta F_t + b_G J_G + T + w_G L_G = rF + N + \text{GovernmentRents} \quad (1)$$

in which exogenous resource revenues are N . The stock of foreign assets is F , and the country is fully integrated into the world economy so the world interest rate r is fixed. b_G denotes the cost of one unit of investment (see equation (13) below). *GovernmentRents* denote profits and rents transferred to the government (see below).

The public capital stock K_G moves according to the following relationship. Government spending on investment is J_G , but only a fraction of this, I_G where $J_G = I_G + \frac{1}{2}\phi I^2/K_G$, actually increases the public sector capital stock. This accounts for absorption constraints such as corruption and poor project choice, which increase with the size of investment and decrease with the size of the capital stock. The Public Investment Management Index, $PIMI = I/J$, is a measure of these absorption constraints. In low and middle income countries the PIMI is approximately 0.5-0.6. This implies that, in a steady state with depreciation of $\delta = 0.03$, the absorption parameter $\phi = 40$. Accumulation of the public sector capital stock is given by:

$$K_{G,t+1} - K_{G,t} = I_G - \delta K_{G,t}. \quad (2)$$

c. The Private Sector and Production

The private sector consists of four sectors, a traded sector (T), a non-traded sector (N) an imported agriculture sector (I) and a non-traded residual sector (R) incorporating agriculture and informal employment. Each sector $j = [T, N, I, R]$ produces output (X_j), priced at (p_j), using technology (A_j), public capital K_G - which is common to all sectors, private capital (K_j) - which is set exogenously (in agriculture it is thought of as land), and private labor (L_j). Private capital is set to one in the T, N and R sectors, and $K_I = 0$ so traded foodstuffs are only imported. This reflects the large component of imported foodstuffs in the Iraqi consumption bundle, and allows the subsistence level of consumption to be met if the domestic agricultural sector shrinks. Total factor productivity in each sector is

calibrated to observed data, and is assumed to grow at a constant rate of 2 percent per period. We have the Cobb-Douglas production functions:

$$X_j = X_j(A_j, K_G, K_j, L_j) = A_j K_G^{\gamma_j} K_j^{\eta_j} L_j^{\alpha_j}.$$

Each sector is a wage taker, and wages may be sector specific. Private sector wages are given by (w_j) . Wages in the public and each private sector are set as a constant multiple of the residual sector wage (w_R) . This residual wage is determined endogenously to clear the labor market.

The private sector chooses employment to maximize instantaneous profits given this wage, so for each sector we obtain:

$$L_j = \left[\frac{p_j \alpha_j A_j K_G^{1-\alpha_j}}{\omega_j(w_A)} \right]^{1/(1-\alpha_j)}, j = [T, N, I, R]. \quad (3)$$

Profits in each sector j are given by:

$$\pi_j = p_j A_j K_G^{\gamma_j} K_j^{\eta_j} \left[\frac{p_j \alpha_j A_j K_G^{\gamma_j} K_j^{\eta_j}}{\omega_j(w_G)} \right]^{\alpha_j/(1-\alpha_j)} - w_j L_j - r K_j. \quad (5)$$

Profits and rents are distributed as outlined in Table 3. Profit and rent from the residual sector is given to residual workers, to remove endogeneity in the determination of w_R , making the model easier to solve.

Table 3: Distribution of profits and rents amongst each sector

Profit/Rent	Government	L_G	L_T	L_N	L_A	Foreigners
π_i $i = [T, N, R]$	Yes					
K_i $i = [T, N, R]$	Yes					
π_A					Yes	
K_A					Yes	

d. The Labor Market

Wages in the public, traded and non-traded sectors are set as a constant multiple of the residual wage, $w_k = \omega_k w_R$ where $k = [G, T, N]$, and $w_G > w_N > w_T > w_R$. The wage in the residual sector, w_R adjusts to clear the labor market, $L_t = \sum_j L_{j,t}$. It is given by:

$$w_R = p_R \alpha_R A_R K_R^{\eta} K_G^{\gamma} / (\bar{L} - L_G - L_T - L_N - L_I)^{1-\alpha}.$$

e. Households and Demand

Demand comes from two sources: consumption and investment. Consumption is allocated between traded, non-traded and food goods, with the latter being a bundle of domestic and imported agriculture. Investment demand comes from government investment in public capital, which uses both traded and non-traded goods.

There are four types of consumer, $i = [G, T, N, R]$, based on the sector of their employment. Each consumer spends all income in the period in which it is received, $(w_i + T_i)L_i = M_i \forall i$. Consumers

demand traded goods (T), non-traded (N) goods and food (F). Food is a constant elasticity of substitution (CES) bundle of the domestically produced residual good (R), and the imported food good (I). This accounts for the large impact of food imports, and permits consumers a subsistence level of food if the domestic residual sector shrinks. Preferences for traded goods, non-traded goods and food are given by a Stone-Geary specification, with a subsistence level of demand by consumer i for good j , $S_{i,j}$. This gives rise to the following demand equations:

$$C_i = \prod_j (C_{i,j} - S_{i,j})^{\theta_{i,j}} \quad (8)$$

$$M_i = \sum_j p_j C_{i,j} . \quad (9)$$

Minimizing (9) subject to (8) gives the following demand function. We assume that $S_{i,j} = 0$ for $j = (T, N)$ and $S_{i,j} > 0$ for $j = (F)$. We thus have:

$$C_{i,j} = S_{i,j} + \frac{\theta_{i,j}}{p_j} (M_i - \sum_j p_j S_{i,j}) . \quad (11)$$

The household demand for food is met by a combination of the non-traded residual good (R) and imported food (I), according to the following preferences:

$$C_F = (\beta C_I^{-\rho} + (1 - \beta) C_R^{-\rho})^{-1/\rho} \text{ where } \rho = \frac{1-\sigma}{\sigma} \text{ and } p_F C_F = p_I C_I + p_R C_R .$$

The mix of C_I and C_R is chosen to minimize expenditure on food, subject to the above budget constraint. This yields the following demand functions and price index:

$$C_I = \left(\frac{1-\beta}{p_I} \right)^\sigma (\beta^\sigma p_I^{1-\sigma} + (1 - \beta)^\sigma p_R^{1-\sigma})^{\frac{\sigma}{1-\sigma}} C_F^*$$

$$C_R = \left(\frac{\beta}{p_R} \right)^\sigma (\beta^\sigma p_R^{1-\sigma} + (1 - \beta)^\sigma p_I^{1-\sigma})^{\frac{\sigma}{1-\sigma}} C_F^*$$

$$p_F = (\beta^\sigma p_I^{1-\sigma} + (1 - \beta)^\sigma p_R^{1-\sigma})^{\frac{1}{1-\sigma}} .$$

Demand also comes from investment in public capital, J_G , (private capital is assumed to be exogenous and constant). One unit of investment in public goods uses β units of the traded good and $(1 - \beta)$ units of the non-traded good. The investment demand for non-traded goods is thus $D_{I,N} = (1 - \beta)J_G$. The cost of 1 unit of investment is given by:

$$b_G = \beta p_T + (1 - \beta) p_N \quad (13)$$

f. The Goods Markets

This model considers four goods markets: traded, non-traded, domestic agriculture and imported agriculture. The traded sector is set as the numeraire with $p_T = 1$. Equilibrium on the market for non-traded goods requires that supply of non-tradables equals consumer and investment demand of non-tradables and is realized by adjustments of p_N :

$$X_N = \sum_i C_{i,N} + (1 - \beta) J_G$$

Clearing of the market for the non-traded residual good endogenously determines the residual good price, p_R :

$$X_R = \sum_i C_{i,R}$$

The traded agricultural good's price is set exogenously by world food prices, so $p_R = \text{constant} = 1$.

Given some rules for setting the public control instruments and initial values of variables, equations (1) – (14) completely determine the path of the economy.

To check that the economy is in equilibrium: in each period the following national accounting identity should hold:

$$N + \sum_j p_j X_j + rF = \Delta F + \sum_i M_i + b_G J_G$$

As metrics for the development of the economy, we track real GDP, $RealGDP_t = \sum_j p_{0,j} X_{t,j}$, using base year prices for each good j .

Model Calibration

a. Parameters from the Data

Calibration is divided into parameters that are taken directly from the data, and those that are fit to impose equilibrium. As the data is taken from multiple sources, some adjustments are needed to make it internally consistent:

- Government spending shares – The amount spent on wages was adjusted from ID 8,431 bn to ID 12,305 bn, so that it was consistent with the wage bill implied by the labor force share and the wage data described above. The difference was taken from direct transfers, which was calculated as a balancing item.
- Consumption shares – The amount spent on goods from the T, N and R sectors was found by allocating items from the Iraq household economic survey 2007, tables 8-3 and 8-4. The consumption share of R was reduced from 42.9 percent (total spending on food and beverages in the household survey) to 12.5 percent (implied by total output of the residual sector as a share of total household income at the aggregate level). This can be justified as much food and beverage consumption may come from imported foodstuffs. The difference was allocated to the imported food sector.

Parameter	Units	Value	Source
PY	Current ID bn (2007)	71,500	World Bank WDI
Output share	Percent	multiple	USAID Iraq Economic Recovery Assessment (2009)
Government capital stock	Current ID bn (2007)	125,000	Penn World Tables 7, estimated using perpetual inventory method (1970-2007) with 15percent annual depreciation. Compares to World Bank capital stock estimate of ID 102,960 b using Comtrade data on capital imports from 2007-2011.
Government foreign debt (2007)	Current ID bn (2007)	125,000	Iraq_LDB_short.xlsx (GFS)
Oil windfall	Current ID bn (2007)	38,538	USAID Iraq Economic Recovery Assessment (implied by share of GDP)
L	Labor force '000 people	6,860	World Bank WDI
Labor force share	Percent	multiple	USAID Iraq Economic Recovery Assessment (2009)
Wages	ID p.a. (2007)	multiple	Iraq household economic survey 2007 table 9-11
Government spending shares	Percent	multiple	Iraq_LDB_short.xlsx (GFS) – see below
Consumption shares	Percent	multiple	Iraq household economic survey 2007 table 8-3 and 8-4 – see below

b. Calibrated Parameters

The calibrated parameters were calculated to impose equilibrium on the model, so that the data was consistent with the observations above.

Production

Labor share in production, α_i , was found by assuming that labor earns its marginal product in each sector, $\frac{\alpha_i P_i Y_i}{L_i} = w_i$, where $P_i Y_i$ is the value added in sector i . We find that the labor share in the traded sector is higher than that in the non-traded sector. Capital in the manufacturing and industrial sectors was heavily hit by the war.

Other factors of production were calculated as follows. Sector specific capital was set to 1 in each sector. The share of public capital in output was set to $(1 - \alpha_i)$. A_R and p_N are set to 1, choosing units. The traded good is the numeraire so that $p_T = 1$ for all periods. As we have imposed $p_T = p_N = 1$ in the first period, A_N and A_T are backed out to let $P_i Y_i = P_i A_i K_G^{1-\alpha_i} L_i^{\alpha_i}$ in each sector, where $P_i, Y_i, K_G, L_i, \alpha_i$ are all taken from the data.

All the profits and rents on capital are allocated to the government, except from the informal sector which are allocated directly to that sector's workers.

Consumption

All the consumption shares are directly taken from the data – subject to some adjustments for consistency – as described above.

Equilibrium

Residual sector:

The wage is found endogenously as $w_R = \alpha_R P_R A_R K_G^{1-\alpha_R} / (\bar{L} - L_G - L_T - L_N - L_I)^{1-\alpha_R}$, which imposes equilibrium in the labor market.

To set w_R equal to that observed in reality we adjust the preference for imported food in the food consumption bundle (β_F). This is done numerically.

The price is set numerically to bring the agricultural sector into equilibrium.

Non-traded sector:

The wage is set exogenously as a multiple of the residual wage. The non-traded price is initially set to unity and non-traded technology, A_N , is chosen to allow non-traded labor and output to equal that observed in the data.

The equilibrium condition in the N sector is given by $p_N X_N = p_N C_N + (1 - \beta)p_N I$. The value of non-traded output, $p_N X_N$, is observed. The value of non-traded consumption is also observed, as a fraction of household income. This leaves β and I , which must both satisfy the above equilibrium condition and also the constraint $s_I G = (\beta p_T + (1 - \beta)p_N)I$. $s_I G$ is the share of government spending going to investment, which is known. However, this must be consistent with overall equilibrium in the non-traded sector, so β and I solve these two equations simultaneously.

User Guide

This report was prepared with the use of a simple model developed in Microsoft Excel and contained in the file "Iraq_Model.xls". It is designed for future use by policymakers and other interested parties. It takes hardcoded inputs in green cells, produces output in blue cells, checks the results in red cells and runs using a simple "Solve" algorithm written in Microsoft Visual Basic for Applications (VBA).

Inputs

Inputs are entered in green cells. Each input refers to a parameter or variable described in the previous two appendices. There are six sections of inputs, colored in green. The first is "Core Parameters". This includes a number of basic parameters and calibrated wage and government spending ratios. The second is "Production", which includes factor shares, technology and growth parameters calibrated to Iraqi data. The third is "Rent allocation". This is a matrix of cells referring to each source of profit or rent to capital, which records a 1 in the cell of the agent receiving the rent and a 0 otherwise. By default all rents and capital returns go to the government, except those from the residual sector which are retained by residual workers. The fourth is "Demand", which describes a number of consumption and investment parameters calibrated to Iraqi housing data. The fifth is the series "N", which describes the exogenous path of the resource windfall. The sixth are the series describing government expenditure. These include formulas describing the behavior of the government in each of the tested scenarios.

Solve

To solve the model click the button "Solve" at the bottom of the model, in cells A190-A191. This calls a simple macro that chooses a price that sets equilibrium in one period in the non-traded, residual and labor markets. It then uses these prices as the starting point for finding equilibrium in each market in the next period. These prices are output as hard-coded values in the series "pN", "pR", and "wR".

Outputs

Outputs are given in the blue cells. They are functions of the inputs, the solved values and one another. Each variable is described in the preceding two appendices. These outputs are also plotted in the charts at the top of the spreadsheet.

Checks

Checks are entered in red text. These should always equal zero after the "Solve" algorithm has been run. They check things such as household consumption equals household income and government income equals government expenditure.