



ISLAMIC REPUBLIC OF IRAN

SELECTED ISSUES PAPER

April 2014

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ISLAMIC REPUBLIC OF IRAN

SELECTED ISSUES

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TARGETED SUBSIDY REFORM IN IRAN¹

A. Introduction

1. **Iran's Targeted Subsidy Reform (TSR) was one of the most courageous moves to reform subsidies in an energy exporting country.** This homegrown reform was unprecedented in Iran's economic history in terms of its scale, preparations and potential implications. It primarily aimed at removing subsidies on energy and other products, with energy subsidies estimated at about 20 percent of GDP. The authorities reached out to more than 70 million citizens and engaged in a months-long public relations campaign. The reform envisaged to change the domestic relative price for energy products by bringing them close to international levels over five years, reduce pollution and help transform Iran into a more competitive market economy.
2. **Iran's reform was unique in its design** (Box 1). The reform attempted to replace direct price subsidies with universal cash transfers to households. It also envisaged direct assistance to enterprises to facilitate adjustment to the new price structure and to the government, to facilitate payments of the government's own higher energy bill. In the first phase of the reform, the authorities substantially increased the prices of all major petroleum products and natural gas as well as electricity, water, and bread. The plan was to use the revenue from these price increases to compensate households with universal cash transfers. In addition, the enterprises were to receive subsidized loans for the adoption of new, energy-saving technologies and credit lines to mitigate the impact of energy price increases on their production. The universal cash transfers to households were to improve income distribution because low income households, with their limited energy consumption, benefited little from subsidized domestic energy prices. Moreover, by opening up bank accounts for receiving cash transfers, financial access would be increased.
3. **After more than three years of implementation, the reform has yet to fulfill its potential.** After a smooth start in December 2010, the second phase of the reform was postponed in mid-2012 following the marked deterioration in economic conditions and with mounting implementation problems. Economic growth decelerated, inflation rose, and the exchange rate depreciated to record levels. The TSR, which was designed to be fiscally neutral, faced cash-flow imbalances, as a large share of the revenues expected from energy price increases failed to materialize, and such revenues fell short of committed cash transfers to households. Energy consumption, after falling in the early months following the launch of the reform, has been on the rise again, as high inflation reduced the real cost of energy. In addition, the real value of the cash transfers has fallen sharply, reducing their benefits to the lower income groups. However, assessing the direct impact of the TSR on the economy remains a difficult task in light of the severe deterioration in the external environment facing Iran during the course of implementation.

¹ Prepared by Ozgur Demirkol and Paul Zimand.

Box 1. Targeted Subsidy Reform Law and Its Mechanics

The Targeted Subsidy Reform Law (TSRL) is the basic law governing the implementation of the subsidy reform in Iran. The law specifies post-reform price targets for subsidized products, sets rules for redistribution of revenue from price increases in subsidized products and lays down the basic structure of administrative management of the reform. Although some parts of the law were modified by other legislation (for example budget laws changing the distribution of revenues etc.), the underlying “philosophy” of the reform stayed largely intact during the implementation.

The TSRL envisaged bringing subsidized prices close to international levels over a five-year period. Domestic liquid fuels’ prices including for gasoline and diesel, would be brought to a level not less than 90 percent of the Persian Gulf FOB prices. The average domestic price of natural gas would be adjusted to about at least 75 percent of average export price of natural gas. Prices for electricity and water would be adjusted to reflect their full cost price. In addition to energy and water, subsidies on wheat, rice, cooking oil, milk, sugar, postal services and air and rail transportation services would be removed by 2015. The law, in view of the target of closing the gap between domestic and international energy prices, envisaged the adjustment of domestic prices in line with the exchange rate used in the relevant year budget and provided some room for stabilizing domestic prices in case of high volatility of international prices. The TSRL also authorized the Treasury to temporarily finance the initial cash flow deficit at the beginning of the reform as cash handouts would be deposited in advance of the price increases.

Proceeds from the price increases were expected to be distributed to households, enterprises, and the government. The law stipulated that 50 percent of the net proceeds from the price increase to be allocated to households as cash and noncash transfers by taking into account the household income and also spent on implementing a comprehensive social security system for the targeted population. The enterprise and utilities sectors would get 30 percent of the proceeds as grants, facilities, and subsidies on bank loans for optimizing their energy consumption, adopting new technologies of production, improving public transportation and supporting the producers in manufacturing industry and agricultural sector. The government budget would receive 20 percent of the proceeds to pay for its own higher utilities’ costs and investment needs. Also, the law allowed for changing households, enterprises and government’s shares up to 10 percentage points in annual budgets.

The law established the Targeted Subsidies Organization (TSO) to oversee the implementation of the reform. The TSO was to be governed by a board comprised of prominent ministers from the cabinet. The TSO would be a nonfinancial public enterprise and its budget would be submitted to the Parliament along with the annual budget. The TSO was envisaged to present semiannual reports to the Parliaments’ budget committee on performance of the TSR and TSO’s financial accounts. The Supreme Audit Court would also submit semiannual reports to the Parliament on the operations of the organization.

With the benefit of hindsight, the TSRL had several weaknesses. The exact timing and magnitudes of the price increases were not fully specified, creating ambiguities for policy makers and uncertainty for consumers. The financial support to households and enterprises could have been designed as temporary to allow them to adjust to the new relative prices; however, the envisaged transfers were presented as permanent. In addition, the law did not provide any guidance to price adjustments in the event of an unexpected depreciation of the currency. Also, the TSRL was not explicit on how monthly cash transfers would be adjusted if the projected revenues failed to materialize. Moreover, the law implied a broader mandate to help enterprises than just assisting in improving energy efficiency.

4. **The paper reviews the implementation of the first phase of the subsidy reform, with a particular emphasis on macroeconomic management.** The first part of the paper looks into the macroeconomic developments during the implementation of the first phase of the reform. The second part focuses on the implementation of the reform, assesses its performance, and explores the relevant factors behind the postponement of the second phase of the reform. The last part of the paper looks into the lessons and recommendations for future reforms.

B. Macroeconomic Developments and Policy Responses

5. **The TSR was launched against a favorable economic backdrop.** The economy had been on an upswing from the 2009 contraction, on the back of higher oil prices. Non-oil GDP was growing at around 6 percent on average in the last three quarters preceding the launch of the reform at end-2010. Average inflation was down to 10 percent from 25 percent two years earlier, and the current account surplus was around 6.5 percent of GDP. The exchange rate, however, was showing some incipient signs of stress. The premium between the parallel market exchange rate and the official rate continued to increase since mid-2010, first following the freezing of some Iranian nationals' bank accounts in the UAE (under the UN resolution in June 2010), and later in September 2010 when the UAE financial centers stopped facilitating money transfers for Iranians in the Emirates' currency.

6. **Macroeconomic indicators deteriorated following the implementation of the reform** (Appendix I). Economic growth slowed down markedly in 2011. The real GDP growth declined to 3 percent by March 2012, half of the growth achieved in the previous year.² Inflationary pressures emerged and the CPI-inflation doubled to 22 percent in December 2011, a year after the launch of the subsidy reform. The corporate profitability declined, reflecting weakening economic activity. Banks' asset quality and profitability deteriorated. On a positive note, balance of payments remained comfortable. Iran's current account surplus reached 11.5 percent of GDP and foreign exchange reserves increased by US\$20 billion in 2011.

7. **During the reform, macroeconomic policies remained relatively accommodative, though uneven.** The Central Bank of Iran (CBI) continued to expand credit on the eve of the subsidy reform. In addition to lending to a specialized bank (Maskan Bank) to finance the government's housing program (Mehr), the CBI opened a new credit line in September 2010 to finance the initial two-month worth of cash transfers to households. Initially the CBI managed to control base money growth by partly sterilizing the excess rials by selling foreign exchange, reducing its international reserves. After the launch of the reform, the CBI maintained this "expand credit and sterilize" policy in place and tightened base money. However, it did not succeed in reducing money growth significantly. Furthermore, despite repeated attempts to convince the Money and Credit Council, the CBI could not increase profit (interest) rates that had become highly negative in real terms. Against

² Iranian year ends on March 20th.

this background, the demand for foreign exchange increased and the spread between the parallel market rate and official rate rose from 1 percent in September 2010 to more than 8 percent by June 2011, and subsequently to 35 percent in December 2011. Fiscal policy, on the other hand, was tightened but not sufficiently enough to offset the impact of monetary policy. The non-oil budget deficit, a better indicator of the impact of fiscal policy on domestic demand, improved by 2 percentage points in 2011.

8. **The reform and the macroeconomic policy framework were seriously challenged in early 2012.** The intensification of sanctions on international financial transactions and oil exports, in late 2011 and early 2012, respectively, led to sharp depreciation of the rial in the parallel market. The depreciation and the financial sanctions disrupted imports. Industrial output declined by more than 10 percent because enterprises found it increasingly difficult to import raw materials and intermediate goods. Removal of some administrative price caps, initially put in place to reduce the speed of the pass-through of inflation following the reform, and the pass-through from exchange rate depreciation brought annualized monthly inflation to above 30 percent in February 2012.

9. **The policy response was mixed.** The central bank attempted to manage this large shock with its limited policy instruments and many competing goals. The central bank's initial policy response was for some increase in policy interest rates, the first interest rate increase in six years, and a small depreciation of the official exchange rate. At the same time, the central bank continued to finance the Mehr housing program. Later in the year, the CBI significantly increased its credit to the public sector enterprises and the government to help with their growing financing needs. Unable to sterilize large liquidity injections with foreign exchange sales following the introduction of the sanctions, the CBI slowed down its lending to the banks to rein in base money growth. Nonetheless, both base money and M2 increased by about 30 percent in 2012, fueling inflation.

10. **The economy entered stagflation in 2012 as inflation accelerated and economic activity contracted.** Oil exports almost halved in 2012 under the weight of sanctions, dragging down oil production by about 25 percent. With oil production and exports on a steep dive and CBI financing on the rise, the rial continued to depreciate during 2012 and inflation rose further. Consumer price inflation exceeded 35 percent at the end of 2012 and hit 41 percent by March 2013. As a result, the real GDP growth contracted by about 6 percent and unemployment rose to 13 percent in 2012.

11. **The sharp depreciation of the exchange rate and high inflation significantly undermined progress under the reform.** High inflation partially reversed the relative price change under the reform. The sharp depreciation of the currency depressed domestic energy prices in U.S. dollars terms, making it more difficult to bring them to the level of 90 percent of the Persian Gulf FOB level, the reform's original target. The high inflation, plummeting currency, and deep contraction in economic activity likely reduced public support for the reform in 2012.

C. The Postponement of the Reform

12. **Despite the worsening outlook early in 2012, the authorities had initially intended to proceed with the second phase of the reform.** In January 2012, the authorities submitted their plans to the Parliament for implementation of the second phase of the subsidy reform before the end of the Iranian year in March 2012. The government seemed to continue favoring large price adjustments, notwithstanding the deterioration in economic conditions. At the same time, the authorities were reportedly planning to eliminate high-income households from receiving cash handouts.

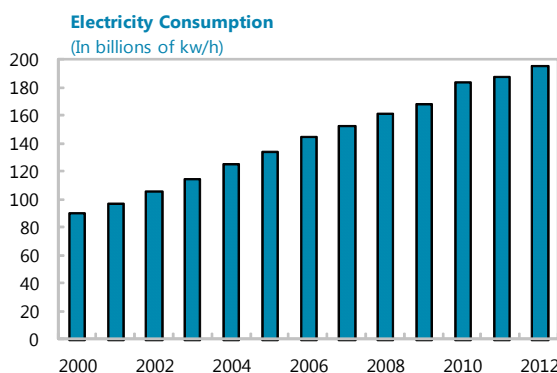
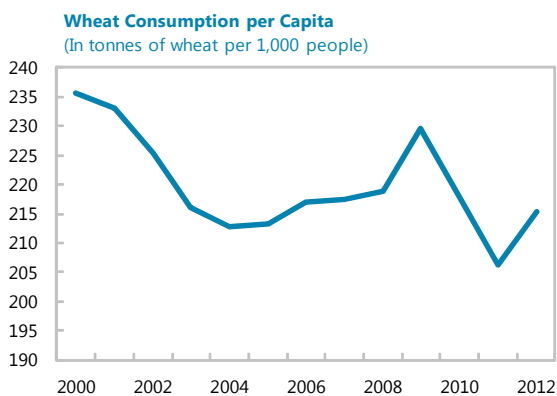
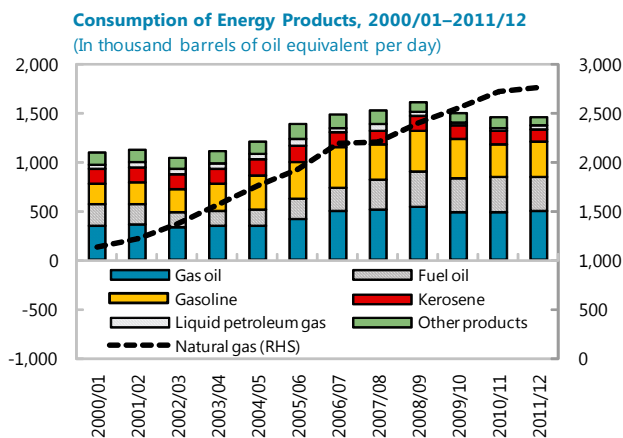
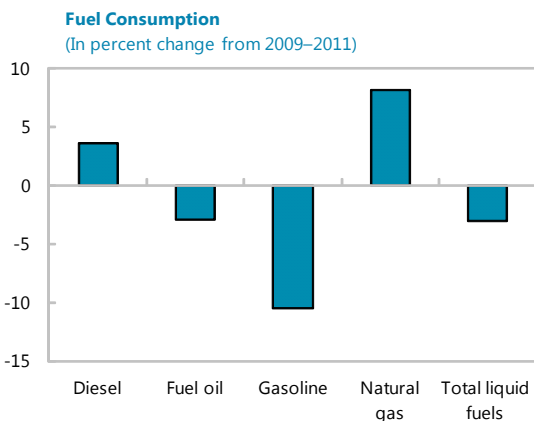
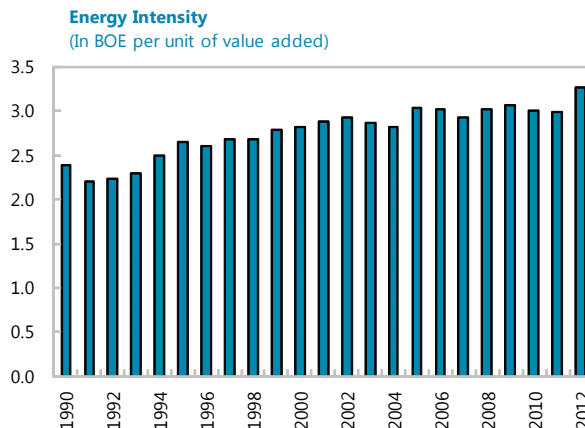
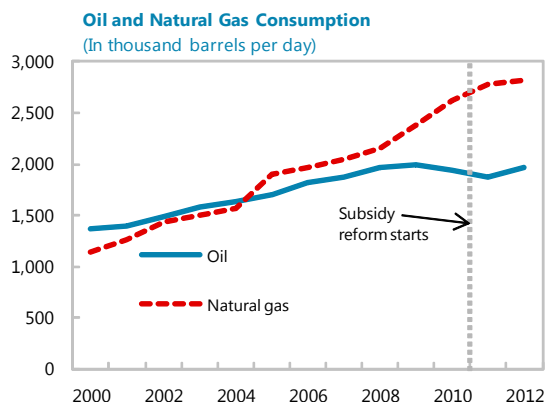
13. **After several rounds of discussions, the Parliament postponed the implementation of the second phase of subsidy reform in 2012.** Concerned about high inflation and volatility in the foreign exchange market, and worried about the impact of the new sanctions, the Parliament voted to postpone the implementation of the second phase of the subsidy reform. First, the Parliament passed a law that banned any energy price increases until mid-June. Later, in June 2012, a parliamentary vote on the subsidy reform budget effectively froze the second phase of the reform, by reducing by half the revenue target from price increases in the draft budget bill. The government subsequently announced that it had decided to postpone the implementation of the reform. In November 2012, following a tumultuous period in the foreign exchange market, the Parliament formally voted to delay the implementation of the second phase of the reform. The Parliament's vote kept the existing cash transfer program intact and barred further price increases.

D. A Brief Look at the Initial Results

14. **The TSR was designed to better utilize hydrocarbon resources, enhance economic efficiency, and improve income distribution.** The reform intended to cut down the growth of domestic energy consumption to create more room for energy exports and further investment in Iran's energy sector. Also, the TSR envisaged that the enterprise sector would adopt energy efficient technologies—with transitional support—to reduce the energy intensity of the economy. Moreover, direct cash transfers to households were expected to improve income distribution by reversing the regressive nature of energy subsidies and by compensating for higher energy prices.

15. **However, changing relative prices proved difficult.** A smooth transition to a new set of relative prices requires a lot of foresight, coordination and a supportive economic policy framework. As evident in Iran's case, even the most careful preparation does not guarantee successful implementation. Supportive policies, most notably a cohesive package to maintain macroeconomic stability, need to be in place. Although the Iranian authorities carefully planned and designed the reform's mechanics, the many competing goals and priorities, such as the need to finance the Mehr housing program, compromised its effective implementation and, therefore, its success in changing relative prices, rationalizing energy use and improving economic efficiency.

Figure 1. Islamic Republic of Iran: Developments in Subsidized Products Consumption

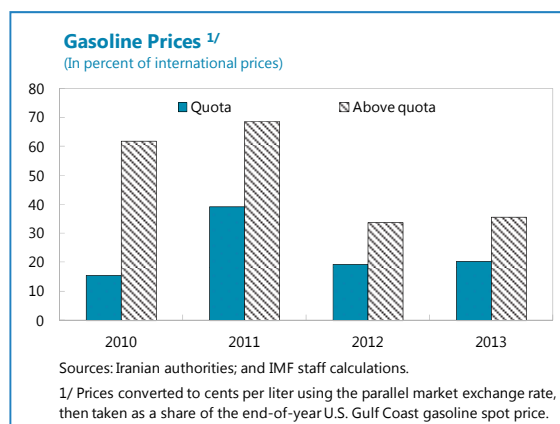


Sources: BP Statistical Review of World Energy; Central Bank of Iran; USDA; and IMF staff calculations.

1/ Prices converted to cents per liter using the parallel market exchange rate, then taken as a share of the end-of-year U.S. Gulf Coast gasoline spot price.

16. **The TSR had some initial positive outcomes, but many proved short-lived.** In particular:

- There was decline in the consumption of subsidized products** (Figure 1). Domestic consumption of liquid fuels fell by about 3 percent in 2011 compared to 2009, driven by the decline in gasoline and fuel oil consumption.³ The diesel consumption, one third of the total liquid consumption in the country, kept increasing but at a slower pace, reflecting the government decision to supply the industry with diesel at subsidized prices to ease adjustment. Likewise, the growth in natural gas consumption, accounting for about 60 percent of the energy consumed in Iran, continued to rise but at a slower pace. The rise in natural gas consumption despite a precipitous increase in its price is partly explained by expansion of natural gas network in the country. Growth in electricity consumption, on the other hand, dropped to 2 percent in 2011, its slowest pace in a decade. Consumption of wheat, a key staple targeted by the subsidy reform, also fell in 2011, for the first time in a decade. In addition, the increase in fuel and wheat prices likely reduced smuggling of these products to neighboring countries. But despite the initial positive response of demand to price changes, the growth in consumption of subsidized products rebounded in 2012 as the price increases under the second phase of the reform were suspended and inflation and nominal incomes rose. Some indicators also suggest that the energy intensity briefly declined during the first phase of the reform.
- Direct cash transfers to households improved income distribution.** Salehi-Isfahani et. al., (2012) found that the poverty rate declined by about 5 percentage points, mostly in rural areas, and indicators of inequality registered declines in the first three months of the program. Monthly cash transfers, 445,000 rials (about US\$ 45 when the reform was launched) per person, were by no measure small. They represented about 15 percent of the average income of a median income family of four in 2011. For many large and poor families the transfers doubled incomes and brought per capita income above the US\$2 per capita threshold. Furthermore, transfers for families were, on average, more than increased expenditures on utility and energy related items,

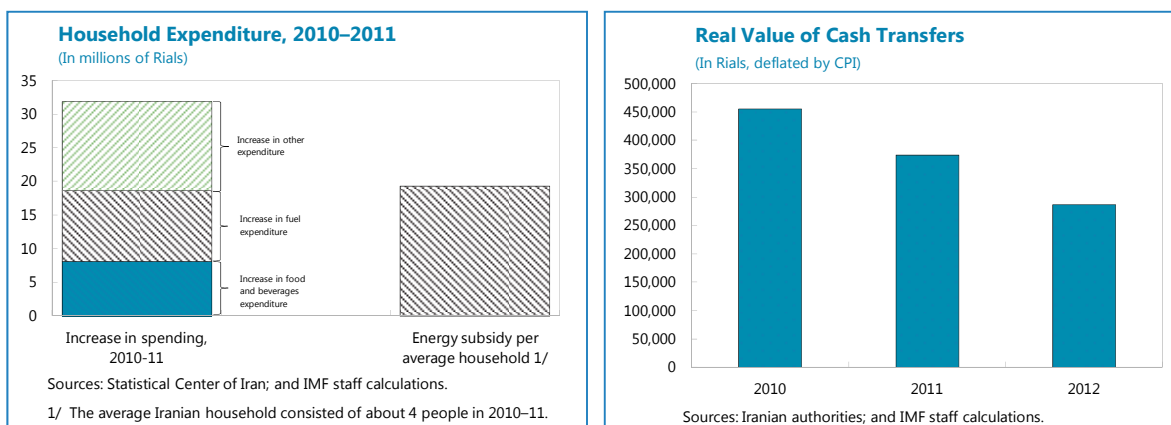


GINI Coefficient, 2009/10–2011/12			
	2009/10	2010/11	2011/12
National	0.41	0.41	0.37
Urban	0.39	0.38	0.36
Rural	0.38	0.38	0.34

Source: Iranian authorities.

³ It is still difficult to judge how much of this decline was because of price elasticity of demand or reduced smuggling after the price hikes.

notwithstanding the increase in prices of other items in the consumption basket. As a result, the Gini coefficient is estimated to have improved to 0.37 in 2011 from 0.41 in 2010, with a sharp drop in inequality in rural areas. Although no official data is available, the sharp contraction of the economy, rapid increase in inflation and decline in real value of wages and cash transfers must have eroded some of the gains in improving income distribution in 2012 and beyond.



E. An Assessment of the Implementation

17. **Despite the initial success, the implementation of the first phase was not executed as planned.** Both domestic policies and external factors played a role in undermining the reform in the first phase. Weak macroeconomic policies and ensuing inflation, deficits in the originally budget-neutral cash transfer program, failure to impose tight budget constraints on enterprises, poor coordination within the government undermined the TSR implementation. Furthermore, large external shocks hit the economy in early 2012 when it was still trying to adapt to the new prices.

18. **A supportive and coherent macroeconomic policy package was not put in place after the reform.** The macroeconomic policy framework, particularly monetary policy, was not tight enough to preserve macroeconomic stability. The central bank continued to finance the *Mehr* housing program when there were signs that it was complicating macroeconomic management and conditions, such as the depreciation of the rial in parallel market and rising inflation. Also, the exchange rate soon became overvalued as the official nominal rate was kept fixed while prices surged. Increasing inflation, the widening spread between official and parallel exchange rate and rise in asset prices called for more austere monetary policy, including an increase in interest rates, which were already negative in real terms. Also, overreliance on the foreign exchange rate as a nominal anchor for monetary policy, with limited operational independence of the central bank, further complicated the central bank's task when the central bank had to stop using foreign exchange reserves as the main sterilization tool.

19. **The authorities' administrative price control policy put further strain on the economy.**

Distorted prices did not clear markets. In products market, administrative price ceilings forced enterprises with rising input costs to either seek financial support from banks or run arrears to their suppliers. Thus, banks faced growing pressure for new loans and turned to the central bank for funding, impairing the conduct of monetary policy. In the money and capital markets, the caps on the interest rate on loans and deposits impeded the efficient allocation of capital. In the foreign exchange market, leaning against the wind for a long time cost both the loss of valuable foreign exchange reserves and policy credibility.

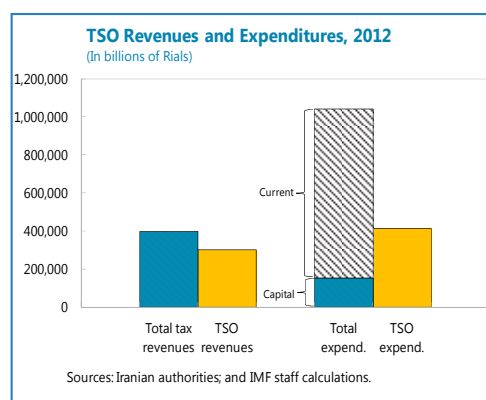
20. **All in all, the authorities were not sufficiently proactive in their macroeconomic policy.**

In mid-2011, an initial attempt to depreciate the exchange rate was reversed despite growing signals from the exchange rate market. The CBI's repeated attempts to increase interest rates were rejected by the Money and Credit Council. The authorities introduced policy changes, by increasing deposit rates and allowing for limited depreciation of the official exchange rate, only when they faced the large depreciation of the parallel market exchange rate in early 2012.

21. **Adding to macroeconomic imbalances, the cash transfer scheme became source of a fiscal deficit.** The cash deficit of the TSO remained high at about 1–2 percent of GDP since its inception. The original plan envisaged that revenue from price increases would cover cash handouts and other payments under the TSR. Nonetheless, the reform started with a deficit. The deficit stemmed from the shortcomings in the TSR law's implementation, mostly related to the failure to impose budget discipline on high energy users as well as a higher number households receiving higher cash transfers than originally planned. Also, energy price increases were kept at the minimum of the envisaged range for some sectors. For example, the increase in diesel prices was rolled back for the transportation sector. Furthermore, collection problems negatively affected TSO revenues. The National Iranian Gas Company faced cash flow problems as some of its large customers could not stay current on their bills and asked for rescheduling of their obligations. With 75 percent of the TSO revenues coming from the sale of natural gas and gasoline, and industry as the main user of natural gas, the TSO could not reach its revenue targets. Moreover, tariff increases in electricity did not help the TSO budget because power generation and distribution companies used these extra receipts to cover their own deficits. In addition to the TSO deficit, rolling back the cash transfers looked increasingly difficult, because households perceived them permanent rather than temporary.

Targeted Subsidy Organization Balance (In percent of GDP)			
	2010/11	2011/12	2012/13
Revenues	0.8	4.8	4.5
Price increases	0.8	4.8	4.5
Expenditures	2.7	6.4	6.1
Cash transfers	2.6	6.4	6.1
Assistance to Social Security and Health	0.0	0.0	-
Deficit	-1.8	-1.6	-1.6

Source: Targeted Subsidy Organization and staff calculations



22. **The large depreciation of the nominal exchange rate in 2012 complicated the implementation of the reform.** The reform law stipulated that domestic sale prices of energy carriers would be no less than the 90 percent of the Persian Gulf FOB prices by 2015 and calculation of these prices had to be based on the exchange rate used in the relevant annual budget. With a depreciating currency, these price targets turned into moving targets, requiring very large price increases at a time. Yet, there was no guidance in the law on how to address large swings in the exchange rate.
23. **There was no progress in restructuring enterprises and improving energy efficiency—a key premise of the TSR.** With TSO revenues hardly financing the cash transfers to households, enterprises did not get the originally envisaged direct assistance from TSO resources to adopt more energy efficient technologies. In addition, administrative price controls and increasing input costs must have squeezed corporate profitability. Also, the sanctions impaired enterprises' access to foreign capital and technology. Against this background, adoption of new technologies and reforming the production structure remained low on the enterprise sector's priority list. Nevertheless, in the absence of direct assistance from the TSO, the authorities supported the enterprise sector by granting access to energy at preferential tariffs and tolerating arrears to energy suppliers. The amount of such support reached 1.25 percent of GDP in 2012 according to the TSO's estimates, almost equal to the share of enterprises promised under the original subsidy reform law, were the 30 percent of the revenue from price increases in 2012 allocated to the enterprises. This policy softened the budget constraint on enterprises, and combined with lack of promised assistance to adopt energy efficient technologies, did not provide enough incentives to change enterprises' business model in the first phase of the reform. The business model of the enterprise sector, based on subsidies and preferential credit, stayed essentially the same as they continued to rely on more subsidized energy and loans during the reform. Also, the continued emphasis on the cash transfer program blurred the real objective of the reform—increasing energy efficiency.
24. **The lack of public information on the implementation and the outcome of the reform prevent a thorough assessment and discussion on how to proceed with future reforms.** In contrast to the period preceding the launch of the TSR, the authorities have not disclosed an assessment publicly during the implementation phase. Accounts of the TSO and legally required audit reports to the Parliament have not been made public, which has contributed to varying views on the causes and size of the deficit and how it was financed.
25. **Finally, the external shocks in 2012 derailed the first phase of the reform.** These shocks proved too large and significant for the authorities to have had the opportunity to correct some of the implementation problems in the first phase and pave the way for continuing with the second phase of the subsidy reform program. Against a backdrop of a rapidly deteriorating and uncertain external environment and fragile economic conditions, another large price shock would have significantly worsened macroeconomic stability.

F. Lessons for the Next Steps

26. **The subsidy reform should remain a top priority for Iran.** After three years of the launch of the subsidy reform, the economy still faces the very same challenges that led to its implementation. Subsidized energy prices continue to encourage overconsumption of energy, worsen pollution, and benefit mostly high-income households. Subsidized prices distort investment decisions by favoring capital intensive investments over labor intensive, at a time when unemployment is a serious concern. Furthermore, they discourage private sector investment in the energy sector and create incentives for smuggling.

27. **In spite of drawbacks and difficulties, Iran is still in a good position to advance the subsidy reform.** By substantially raising energy prices in the first phase, the authorities have successfully altered the public perception that energy prices should stay low in a large energy producing country. Also, they proved that there are more efficient ways of sharing oil wealth other than through indiscriminately subsidized energy prices.

28. **The lessons learned from the first phase and international best practice should guide any new strategy.** The sharing of Iran's hydrocarbon wealth with all citizens should stay as the cornerstone of the program. This goal, however, needs to be supported by the right framework and macroeconomic policies to effectively deliver results. The weaknesses in implementation in the first phase of the reform and other international experience could help to improve the framework envisaged in the original law.

29. **A strong and coherent macroeconomic policy framework and implementation should support the second phase.** The macroeconomic policy implementation was uneven in the first phase of the reform and proved that strong monetary and fiscal policies are critical to anchoring inflationary expectations and instilling confidence. Also, the reform should be part of a broader strategy to reform other parts of the economy and other goods and services' prices. Without a strong commitment to macroeconomic stability, gains from the reform will easily unravel and undo years of hard work, and waste the political capital put behind this difficult reform in the process.

30. **The need to eliminate the reform's current deficit should be carefully balanced against the principle of distribution of hydrocarbon wealth to all citizens.** Universal cash transfers have shown the authorities' willingness to share the hydrocarbon wealth with all citizens, notwithstanding the reform's deficit. Rolling back the cash benefits from some recipients could be a challenging task, given the difficulties in identifying and means testing recipients under the program and the continuously moving nature of income deciles. Therefore, priority should be given to increasing the cash inflows of the reform, for example by enforcing stricter collection of energy bills and eliminating lower priced gasoline and diesel quotas. Differentiation of cash handouts among different income groups or instituting re-enrollment requirements could also help contain cash outflows.

31. **All energy users, particularly enterprises, should pay their energy bills in full.** Lack of enforcement in collection of energy bills contributed to the cash deficit and undermined incentives to adopt more energy efficient technologies in the first phase.
32. **Enterprises should face hard budget constraint to have incentives to restructure.** The use of payment arrears and loan subsidies should not substitute for subsidized energy. The authorities should send a strong message that enterprises need to adjust to the new reality by reinforcing collection and foreclosure mechanisms and strengthening bank supervision. The experience under the first phase of the reform exposed weaknesses in this area and should help lay down a roadmap for going forward.
33. **Cash transfers could be made more conditional and targeted, and tilted towards specific socially important expenditure.** The subsidy reform law already provides room for switching expenditures under the reform. Iran can benefit from the experience of some other countries which introduced similar targeted cash transfer programs (Box 2). The international experience shows that targeting the poor remains a difficult task and many programs often benefit other households at higher income levels. Nevertheless, targeted programs are still the best available tools to protect low income groups.
34. **A depoliticized energy price setting mechanism should be put in place.** Successful reformers moved toward more depoliticized energy price setting mechanism responding to changes in global energy prices. The subsidy reform law aimed at bringing liquid fuel and natural gas prices to 90 percent and 75 percent of their comparable international prices, respectively. The law, however, did not explicitly mention any price setting mechanism. Establishing an automatic pricing formula and publishing of detailed information on the pricing mechanism could help the authorities to distance themselves from energy pricing. Moreover, responsibility for implementing this automatic price setting could be given to an independent body to underline the technical nature of these decisions. Philippines, Turkey, and South Africa used such mechanisms to make transition to international prices.⁴
35. **The calculation of hydrocarbon rent and transfers should be reconsidered.** The cash transfers should be linked to the total profitability of Iran's oil and gas sector. Under a liberalized price structure where domestic prices respond to change in international prices, any rise in output and international energy prices will likely result in a rise in profits of the oil and gas sector and therefore, higher transfers to households. On the other hand, a fall in output or international prices will erode the profitability of the sector and cut back the transfers. Also, some hybrid structure which allows for smoothing of prices could also be designed to achieve stability of cash transfers. This strong link to profitability also ensures that required investment to keep up the hydrocarbon production always remains a priority.

⁴ Energy Subsidy Reform, Lessons and Implications , 2012, IMF

Box 2. Household Targeting Systems

Over the last two decades many emerging market countries have introduced programs to make sure that social transfers reach the poor and vulnerable households. These countries employed different targeting instruments to determine eligibility for social transfers such as household assessment mechanisms (means testing, proxy means testing), broad categorical eligibility (geographical targeting), community selection and self-selection by applying for benefits. The international experience shows that there is no “blueprint” recommendation for household targeting systems and many countries adopt a combination of these systems. The success of the targeting systems critically depends on their design, data collection process, implementation and oversight.

Household assessment mechanisms aim at maximizing targeting accuracy in a transparent and affordable manner. Verified means testing (VMT) requires extensive verification of information and is technically infeasible in emerging market economies with large informal labor market. Unverified means testing (UMT) is a more feasible approach which can be implemented relatively quickly with less cost. Although targeting accuracy is within acceptable boundaries, measurement errors, lack of transparency and incentives for household underreporting could undermine its desirability when a long term program is being designed. Proxy means testing (PMT) is a widely used alternative for targeting cash transfers, particularly in developing countries with large informal labor market. Under this approach, an index of socioeconomic variables is used to predict household welfare. PMT has become quite popular in developing countries where information systems remain inadequate to verify income and wealth and cross checking data.

A hybrid approach, combining chosen household assessment method with broad categorical eligibility seems to improve accuracy of targeting. Geographic targeting is a widely implemented method under categorical eligibility criteria. Under geographic targeting, eligibility for benefits is determined by primary residence location of the household. Many emerging market countries complement proxy means testing with a certain degree of geographic targeting, prioritizing regions with high poverty.

Armenia introduced its Family Benefit Program (FBP) in 1999 to assist individuals and families that are below a certain income level. The FBP is self selection program which is means tested on income and other proxies for poverty risk factors. Targeting is done by a scoring formula, giving priority to more vulnerable segments of the society like single mothers, disabled and orphans. The evaluation is based on the information and documentation submitted by the applicant.

Brazil’s signature conditional cash transfer program, Bolsa Família Program (BFP), relies on unverified means testing (UMT) using data collected under a unified registry, the Cadastro Único, to screen families for eligibility. Information about income is declared by families and crosschecked using other administrative records, which keeps administrative costs of running the system at a minimum. Some geographic targeting seems to have been used in implementing these programs.

Indonesia has a temporary unconditional cash transfer program, Bantuan Langsung Tunai (BLT), which was deployed twice, first in 2005-06 after the reduction in fuel subsidies to mitigate the impact on poor and in 2008-09 during the global increase in food prices. BLT employed a mixture of community-targeting, self-assessment, and pre-existing lists to collect data, and proxy means testing to determine beneficiaries.

Mexico’s conditional cash transfer program, Progresa/Oportunidades, has been in operation since 1997. The program is a combination of geographic targeting, proxy means testing (PMT), and demographic targeting (taking into account the number of children in the household). Under the program, once particular families are determined as eligible, a public meeting is held to get community reaction to the choice of these families and to let other excluded families to apply for reconsideration. Moreover, benefits under the program are directly paid to female household heads.

The Philippines runs a conditional cash transfer program since 2008, Pantawid Pamilya, which uses the National Household Targeting System for Poverty Reduction (NHTS-PR). This system is based on proxy means test (PMT) methodology to estimate the level of economic welfare of a household and complemented by geographic targeting and validation. The PMT system uses several variables like household demographics, education and occupation of household members, housing conditions and access to basic services as good proxies of income. There are two different models for rural and urban households to account for the socioeconomic conditions.

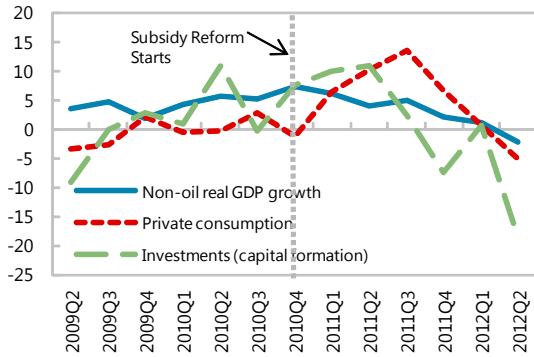
36. **Financial relations between state enterprises in hydrocarbon sector and links with the central government should be more transparent.** Despite the clear distribution of oil and gas export revenues between state enterprises and central government in the budget, financial relations among different enterprises in hydrocarbon sector and budget remain opaque. In many other oil producing countries, national oil companies are run on a commercial basis. They pay a royalty to extract hydrocarbon resources and also transfer profits to treasury as dividends to the main shareholder. Iran's current system mimics this structure but opaque financial relations undermine the accountability of these enterprises and incentives for profitability.

Appendix I. Macroeconomic Developments After the Reform

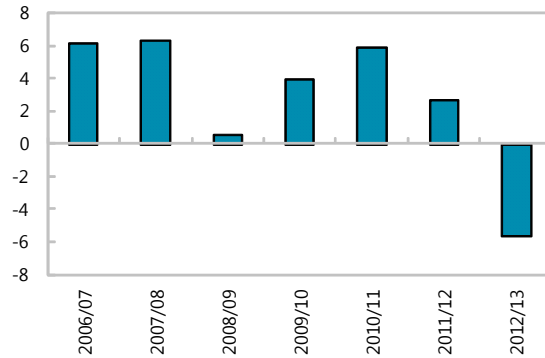
1. **Economic growth slowed down markedly following the implementation of the reform.** The quarterly growth rate continued to decelerate and dropped to 2 percent in the last quarter of 2011, just before the intensification of sanctions, from 5 percent in the same quarter of the previous year. The deceleration became more visible from September 2011 on, as the impact of cash transfers on private consumption waned, construction activity slowed down, and industrial production declined markedly. Large increase in input costs associated with higher energy prices weakened corporate sector profitability, as enterprises had difficulties in passing through rising costs to consumers. Production in some large energy intensive sectors such as automobile, steel, cement and petrochemicals continued to grow, albeit at a declining rate, supported by the rise in commodity prices in international markets and strong domestic demand in the first half of the year. Against this background, the real GDP growth declined to 3 percent by March 2012, half of the growth achieved in the previous year.
2. **Inflationary pressures emerged and prices increased.** The sharp rise in energy prices led to an acceleration in the CPI inflation, which rose from 13 percent (year-on-year) on the eve of the subsidy reform in December 2010 to about 22 percent over a twelve month period. Prices of food, clothing, household equipments and medical expenses increased at about 20 percent over the three quarters following the launch of the reform whereas transportation sector prices, which took the direct hit from increased energy prices, rose above 30 percent. Given the magnitude of the price increases in subsidized products, the rise in the CPI inflation was still on the low end of many estimates. This owed much to the authorities' various policy measures including strict price controls and accumulation of inventories of strategic key staples. Favorable global food prices also helped limit food price increases in 2011. Developments in the producer price index (PPI), however, showed the true nature of the price shock with 12-month PPI inflation acceleration from about 13 percent in December 2010 to almost 40 percent in December 2011.
3. **Supported by higher oil exports and energy prices, the balance of payments improved.** Declining domestic oil consumption provided room for more exports as envisaged under the reform program. Iran's oil and oil product exports increased in 2011, after three years of contraction. In addition, a depreciating currency in the parallel market, emerging difficulties in conducting international transactions and increases in trade tariffs to protect domestic industry kept the import growth under control. Iran's current account surplus doubled from the previous year and reached 11.5 percent of GDP in 2011. Despite large capital outflows, Iran's gross international reserves increased by US\$20 billion to above US\$90 billion by the end of 2011.
4. **Corporate profitability was adversely affected.** The Tehran Stock Exchange had reached record highs in the wake of the subsidy reform. This was partly caused by new successful IPOs, bearish performance of the other alternative investment options and, in the case of resource based industries, by increasing commodity prices in international markets. With the TSR implementation, equity prices for the sectors mostly affected by the reform declined later in the year. Real returns rapidly declined in the remainder of 2011 in parallel to the weakening economic activity.

Appendix Figure 1. Islamic Republic of Iran: Macroeconomic Developments

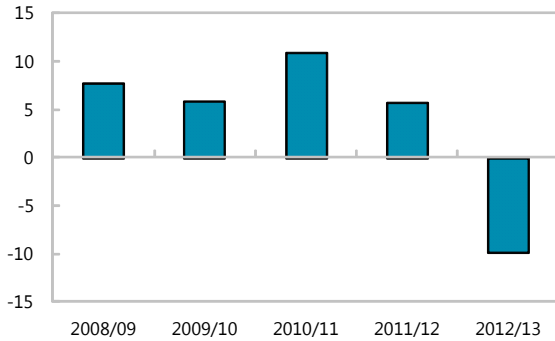
Growth, Consumption, and Investments
(In quarterly y-o-y percent)



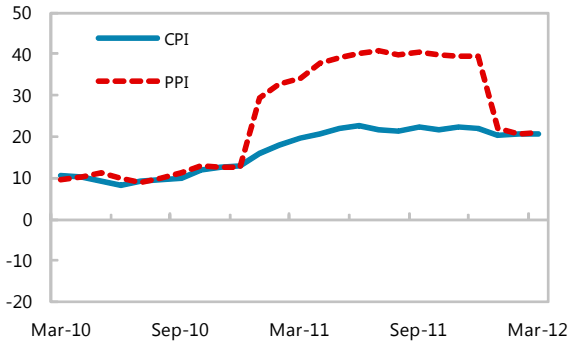
Annual GDP Growth, 2006/07–2012/13
(In y-o-y percent change)



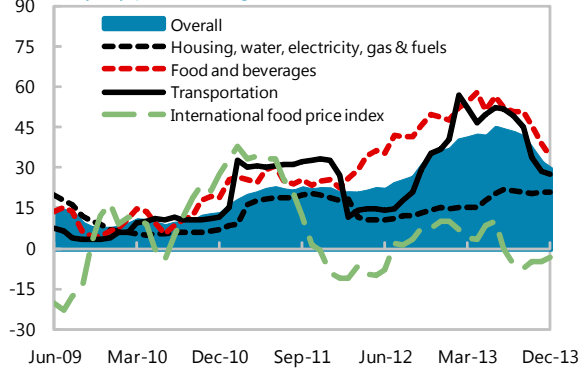
Production Index of Large Manufacturing Establishments
(In y-o-y percent change)



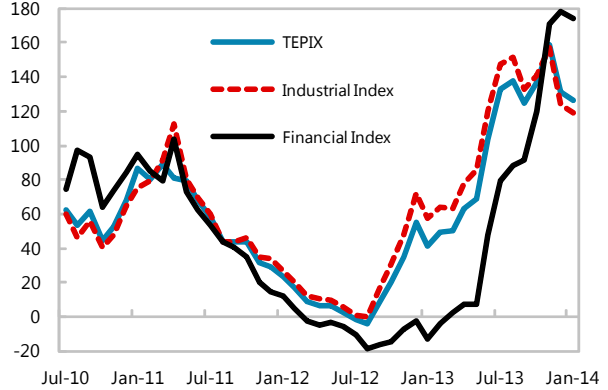
CPI and PPI, 2010/11–2011/12
(In y-o-y percent change)



CPI and Components, 2009/10–2013/14
(In y-o-y percent change)



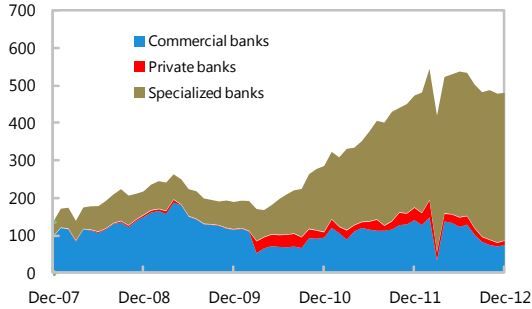
Main Stock Market Indices
(In y-o-y percent change)



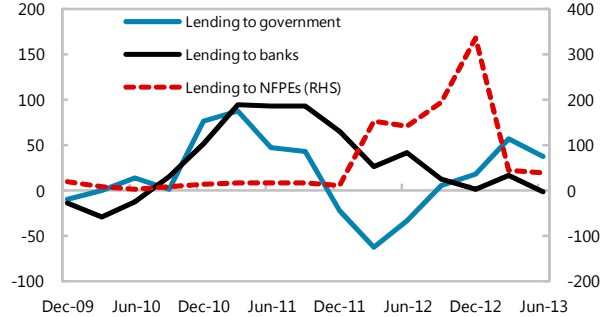
Sources: Central Bank of Iran; IMF WEO database; Tehran Stock Exchange; and IMF staff calculations.

Appendix Figure 1. Islamic Republic of Iran: Macroeconomic Developments (Concluded)

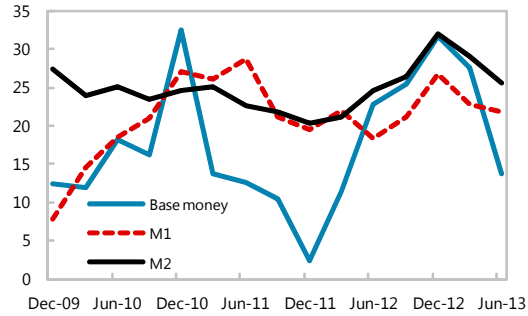
CBI Lending to Banks
(In billions of Rials)



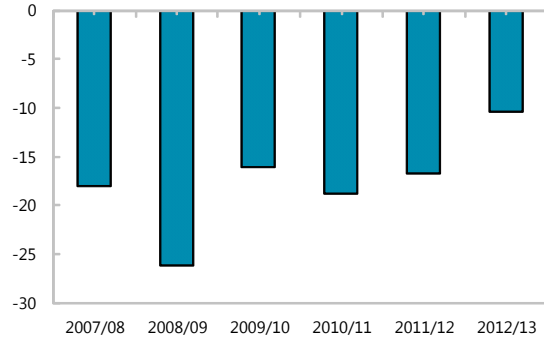
CBI Asset Growth
(In y-o-y percent change)



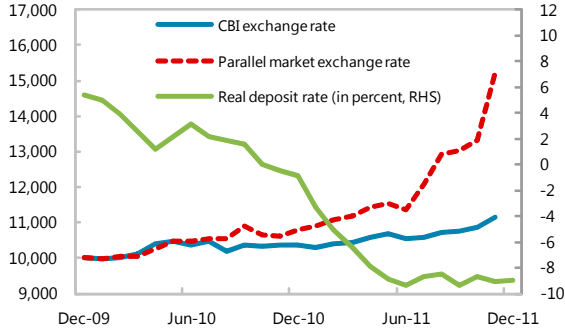
Money Growth
(In y-o-y percent change)



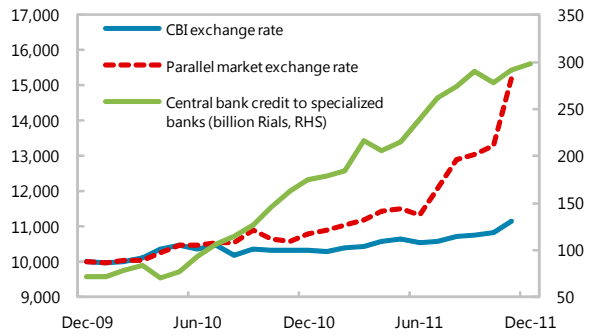
Non-oil Deficit
(In percent of non-oil GDP)



Parallel and CBI Exchange Rates
(Rials per USD)



Parallel and CBI Exchange Rates
(Rials per USD)



Sources: Central Bank of Iran; International Financial Statistics; and IMF staff calculations.

References

- Amuzegar, Jahangir, 2012, "Iran's Subsidy Reform: RIP," MEES News Letter, *Middle East Economic Surveys*, (December 17).
- Castañeda, Tarsicio, Kathy Lindert, Bénédicte de la Brière, Luisa Fernandez, Celia Hubert, Osvaldo Larrañaga, Mónica Orozco, and Roxana Viquez, 2005, "Designing and Implementing Household Targeting Systems: Lessons from Latin America and the United States," Social Protection Discussion Paper Series, No. 0526 (Washington: World Bank).
- Clements, Benedict, David Coady, Stefania Fabrizio, Sanjeev Gupta, Trevor Alleyne, and Carlo Sdradevich, 2013, "*Energy Subsidy Reform: Lessons and Implications*," (Washington: International Monetary Fund).
- Grosh, Margaret, Carlo del Ninno, Emil Tesliuc, and Azedine Ouerghi, 2008, *For Protection and Promotion, The Design and Implementation of Effective Safety Nets* (Washington: World Bank).
- Guillaume, Dominique, Roman Zytok, and Mohammad Reza Farzin, 2011, "Iran—The Chronicles of the Subsidy Reform," IMF Working Paper No. 11/167 (Washington: International Monetary Fund).
- Hosseini, Mirshojaeian Hosseini, and Shinji Kaneko, 2013, "Fuel Conservation Effect of Energy Subsidy Reform in Iran," Working Paper No. 3-1 (Teheran: University of Tehran) Available via the Internet: <http://EconPapers.repec.org/RePEc:eut:wpaper:dp3-1>.
- Moshiri, Saeed, 2013, "Energy Price Reform and Energy Efficiency in Iran," IAEE Energy Forum, No. 2 (Cleveland: International Association for Energy Economics). Available via the Internet: <http://ssrn.com/abstract=2335755>.
- Narwani, Shirin, 2012, "Iran's Energy Subsidy Reform: Lessons and a Predicament," *Oxford Energy Forum*, No. 88, pp. 20–2 (Oxford: Oxford Institute for Energy Studies).
- Research Center of Islamic Consultative Assembly, 2013a, "Proposals to Amend the 2013 Budget Act: Subsidy Targeting (Second Edition)," Serial No. 13244, (in Persian), Tehran.
- , 2013b, "An Examination of the 2014 Budget Legislation: Some Points about the Implementation of the Second Phase of Subsidy Targeting," Serial No. 13486, (in Persian), Tehran.
- , 2013c, "Proposals for a Revision to the Subsidy Targeting Act," Serial No. 13360, (in Persian), Tehran.

Salehi-Isfahani, Djavad, Bryce Wilson Stucki, and Joshua Deutschmann, 2013, "The Impact of Iran's Subsidy Reform on Households: Evidence from Survey Data," Virginia Tech. Available via the Internet: http://filebox.vt.edu/users/salehi/Iransubsidy_v3.pdf.

Tabatabai, Hamid, 2011, "The Basic Income Road to Reforming Iran's Price Subsidies," *Basic Income Studies*, Vol. 6, No. 1.

———, 2012, "Reforming Energy Subsidies: The Iran Model," *Oxford Energy Forum*, No. 88, p. 17 (Oxford: Oxford Institute for Energy Studies),

MONETARY POLICY AND THE INFLATION-OUTPUT TRADEOFF IN IRAN¹

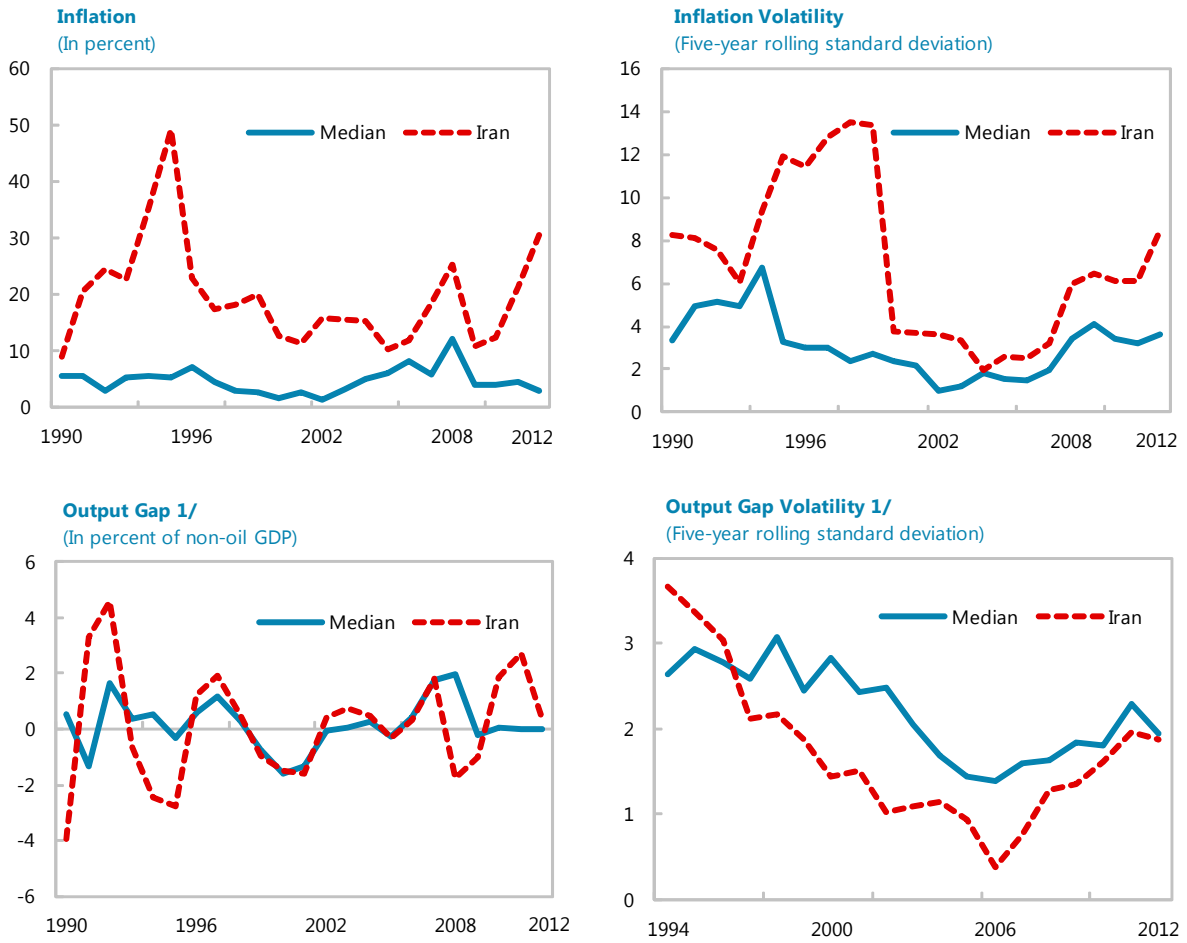
1. **Iran’s macroeconomic performance over the past twenty years has displayed higher inflation than output volatility in a cross-country comparison.** Three stylized facts stand out about Iran’s inflation and output performance over the last two decades. First, the level and variability of inflation in Iran have been persistently above the median of a sample of other oil-exporting countries. Second, Iran’s record of containing the variability of non-oil output is more favorable, being below the median. Third, both inflation and output variability have risen markedly since the mid-2000s. Part of the increase was due to the global financial crisis. But in explaining the three facts together, the role of macroeconomic stabilization policies, particularly monetary policy, emerges as a crucial factor. Monetary policy can stabilize either prices or output in the face of supply shocks, but not both—inflation and output stabilization are policy tradeoffs when dealing with supply shocks. Examining actual outcomes of inflation and output after well-identified supply shocks therefore helps shed light on the authorities’ relative preferences in stabilizing the economy.

2. **A simple macroeconomic model infers the authorities’ preferences for stabilizing inflation and output in two sub-periods.** In the first step, the model estimates the relative preferences over inflation and output stabilization (alternatively, the degree of inflation aversion) for the period 1991–2010. The preferences that the authorities “revealed” over this time period yields a reference point, which serves as benchmark to assess the policy response to the two large shocks that have hit the Iranian economy in the years 2011–12: (i) the subsidy reform, and (ii) the tightening of international economic sanctions. Predictions from a simple policy reaction function give additional context for characterizing the policy response.

3. **The policy response to the negative shocks in 2011–12 is consistent with a higher tolerance for inflation, indicating a need to rethink the monetary policy framework.** Recognizing the large magnitude of the shocks, parameter estimates of the macroeconomic model suggest that inflation variability increased proportionally more than output variability. This result suggests that the policy response aimed towards stabilizing output, possibly due to constraints on the CBI’s ability to contain inflation. A simple policy reaction function in the spirit of Taylor (1993) also points to a greater emphasis on output stabilization in this period. Several factors can explain why the policy response did not control inflation better, including institutional weaknesses in the conduct of monetary policy. By revisiting the experience of countries that permanently reduced inflation, the paper concludes with recommendations for strengthening the monetary policy framework in Iran.

¹ Prepared by Robert Blotvogel and Yi Liu.

Figure 1. Islamic Republic of Iran: The Inflation-Output Stabilization Tradeoff



1/ The output gap is the cyclical component of HP-filtered real non-oil GDP series.
Sources: Iranian authorities; and IMF staff calculations.

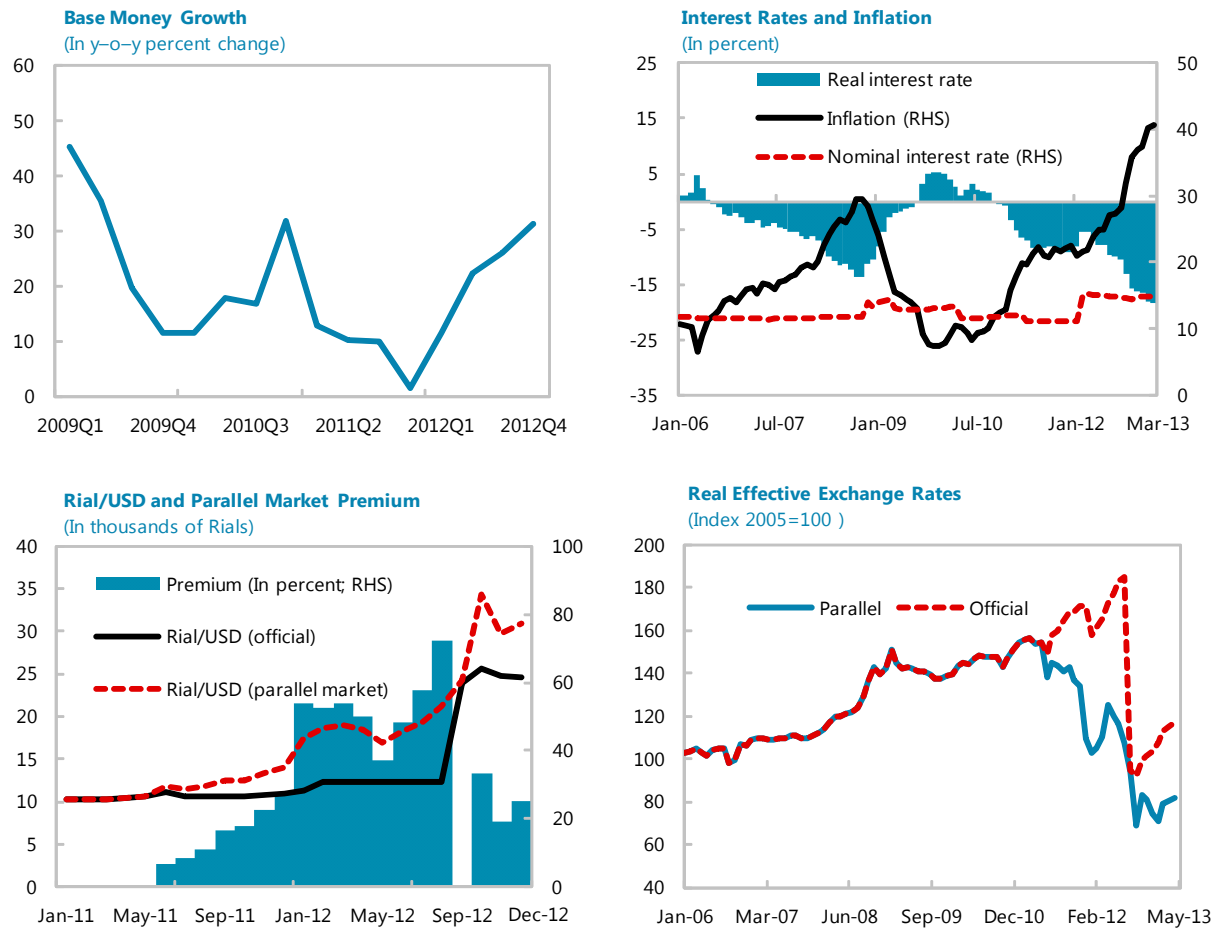
A. A Brief Narrative of the Shocks and the Policy Response of 2011–12

4. **The subsidy reform and the tightening of international economic sanctions imparted large, negative supply shocks to the economy.** Although the shocks also affected demand through balance sheet and income channels, their main impact was to increase costs of production.¹ The subsidy reform led to sharp increases in the price of several subsidized energy products (gasoline, fuel oil, kerosene, diesel, and electricity), directly raising input costs for businesses and households. Likewise, the new economic sanctions of 2012 barred the Iranian banking system from transacting in the international financial system, impairing Iran’s ability to import factors of production. In particular:

- **Subsidy reform (2011).** The authorities initially brought down base money growth by selling foreign exchange and gold. However, this response faded later in 2011, as the injections of domestic liquidity from credit to specialized banks—largely associated with the funding to the Mehr Housing Program—and the government turned out too large to sterilize with foreign exchange interventions. The exchange rate started to depreciate in the parallel market around April 2011, at first gradually but more abruptly towards the end of the year. There was limited response from monetary policy, except by aiming to tighten credit to other sectors of the economy while accommodating social programs, like for housing.
- **International Sanctions (2012).** In 2012, the United States and other countries introduced sanctions on Iranian oil exports and financial transactions, putting additional pressure on the foreign exchange market. The MCC raised the rates of return on bank deposits and central bank-issued participation papers in early 2012. Some private banks took an additional step and set interest rates above the official ceilings on some type of term deposits. Despite these increases, real interest rates descended into increasingly negative territory, and few banks were interested in buying the participation papers. One important consequence of the sanctions was that they impaired the CBI’s ability to transact in dollars. The CBI therefore did not intervene on a large scale in the foreign exchange market to sterilize the large liquidity injections throughout the year. Instead, the authorities introduced a two-tiered official exchange rate system, with the appreciated rate applying to imports of food and other basic goods. Yet, against the background of the large real depreciation in the parallel foreign exchange market, inflation accelerated sharply.

¹ The subsidy reform entailed a combination of a simultaneous supply and demand shock. Unconditional cash transfers boosted households’ nominal, and depending on their consumption pattern, real incomes. Chapter 1 discusses the design and implementation of the first phase of the subsidy reform and draws lessons for future phases.

Figure 2. Islamic Republic of Iran: Indicators of the Monetary Policy Stance



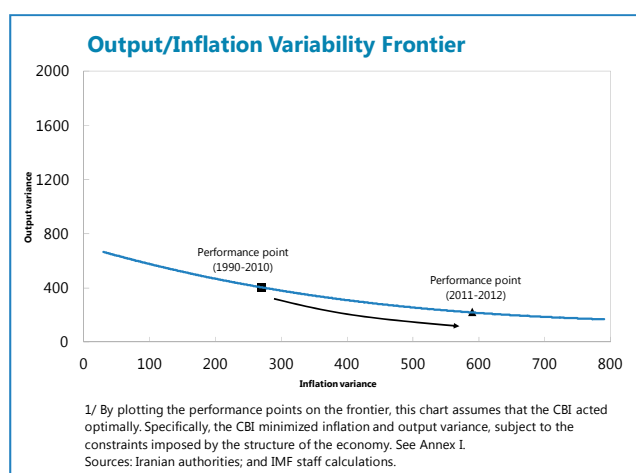
Sources: Iranian authorities; and IMF staff calculations.

5. **A simple macroeconomic model shows that the goals of inflation and output stabilization carried about equal importance in 1991–2010.** Appendix I lays out the technical details of the estimation. The model's main results are:

- **The estimated degree of inflation aversion α equals 0.49, consistent with Iran's relatively high inflation and relatively low output variability.** An α of less than 0.5 is relatively low, indicating only a mild preference for inflation stabilization. In a study of advanced and emerging market economies, Cecchetti and Ehrman (2002) found alphas ranging from 0.99 to 0.50. Only Belgium and Mexico had lower values for α than Iran. This study covered earlier periods when Mexico had not yet adopted inflation targeting and Belgium still had its own currency. The finding in this study of a comparatively small number for Iran's α reinforces the conclusion of the cross-country comparison in the introduction, that Iran was unable to contain inflation variability.

- **The inverse of the aggregate supply curve γ suggests that the output costs of disinflation could be small.** The impulse response functions of a vector autoregression yield an estimate of $\gamma=0.78$, which is in the bottom quintile of the estimates in Cecchetti and Ehrman (2002). A low gamma implies a steep aggregate supply curve, which in turn means that output is not very sensitive to changes in prices. Differently, the inflation/output variability frontier is relatively flat, indicating that swings in inflation have to be large to help keep output closer to target. In standard macroeconomic theory, the slope of the aggregate supply curve depends on the degree of nominal rigidity in the economy, which in turn varies with the credibility of the monetary policy framework. If credibility is relatively low, companies try to avoid keeping the prices of their goods fixed for too long. They are in the habit of adjusting prices rapidly when inflation changes, reducing nominal rigidity. Companies with flexible prices are less likely to alter production plans when unexpected deviations in inflation materialize, and as a result, output is not very responsive to inflation (Mankiw and Reis, 2011).

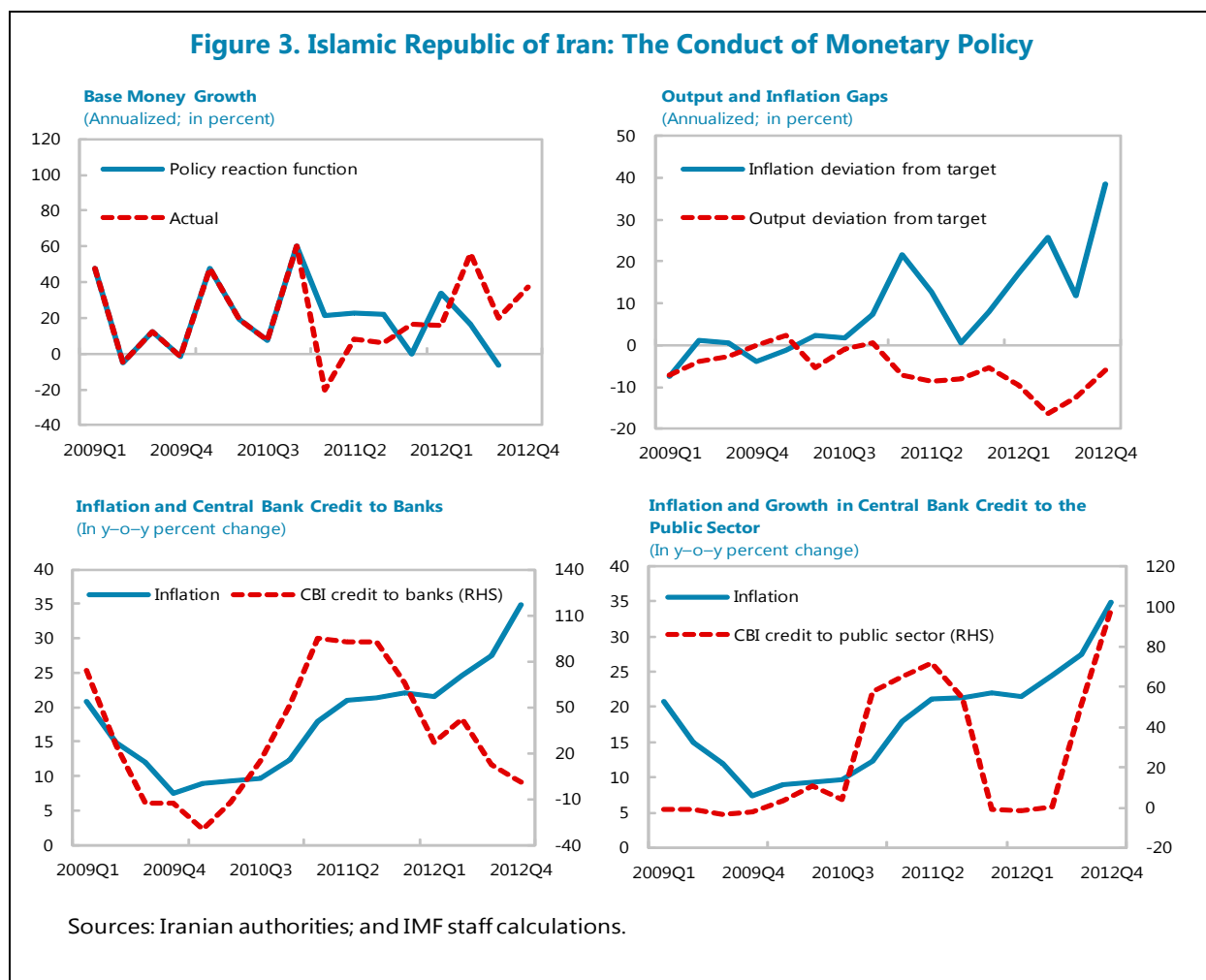
6. **Examining the policy response of 2011–12, the model suggests a shift in preferences towards stabilizing output over inflation.** The subsidy reform and the intensification of sanctions enter equations (1) and (2) in Appendix I as negative realizations of s_t , forcing the Iranian authorities in their policy response to focus on inflation or output stabilization. To compare the authorities' policy response to their long-run behavior, it is useful to think of the model's solution (Appendix I) as a frontier of inflation and output variability. Each point on the frontier corresponds to a different degree of inflation aversion α , assuming that the economy operated with the same aggregate supply curve. The actual ratio of output and inflation variability over the two-year period of 2011–12 shows a shift toward a new point on the frontier, corresponding to $\alpha=0.32$. Because of the relatively flat slope of the inflation/output variability frontier, the gain in lowering output variability came at the expense of a significant increase in inflation variability. Note that the estimated α for the years 2011–12 is likely an upper boundary. The authorities introduced several administered measures to contain inflation immediately after the subsidy reform. Without these controls, recorded inflation variability would have likely been higher.



7. **Estimating a simple policy reaction function is another way of detecting a shift in preferences.** The reaction function derives from a GMM-regression of base money growth on the output gap and the deviation of inflation from target over the period 1991–2010. The regression equation is similar to Clarida, Gali, and Gertler's (2000) with two differences. First, base money replaces the interest rate as the dependent variable, the monetary policy indicator that the authorities control. For most of the sample period, the CBI targeted a growth rate in base money

to implement its desired policy stance. And in episodes when trying to peg the exchange rate of the rial, the CBI controlled base money growth through foreign exchange interventions to ensure that the monetary policy stance was consistent with the chosen exchange rate target. Second, the nominal exchange rate acts as an indicator of inflation instead of inflation itself, given the high share of tradeables in the consumption basket.

8. **Predictions from this policy reaction function corroborate the increased concern on stabilizing output over inflation.** Using the estimated coefficients and the realizations of the output gap and the nominal exchange rate in the parallel market in 2011–12, the function predicts the rate of money growth that would have been consistent with the way the authorities' conducted monetary policy in the period 1991–2010. The first result is that monetary policy in the immediate aftermath of the subsidy reform appears to have been relatively tight, with negative base money growth in the face of a widening output gap. However, the situation reversed in 2012, which is the second result. The central bank started to scale back sterilization operations that aimed to contain the impact on base money from earlier surges in central bank credit to the government and specialized banks. Monetary policy turned expansionary even though the exchange rate started to depreciate, sending inflation soaring.



9. **The benefits in terms of output stabilization from accepting higher inflation are diminishing.** The significant increase in inflation variability since 2011 has not prevented a spike in output variability, suggesting that the benefits from accommodating inflation are small. This interpretation would also suggest that monetary policy could have played a greater role in containing inflation variability without imparting significant costs in terms of output. In fact, the estimated flatness of the inflation/output variability frontier, resulting from the steepness of the aggregate supply curve, indicates that output does not seem very responsive to the state of demand. Instead, output moves primarily as a function of supply side constraints. Demand shocks tend to mainly affect prices, and this the more so when inflation is at high levels. Therefore, to regain control over output movements at reasonable levels of inflation variability, the Iranian economy should move to the left of the inflation/output variability frontier. In terms of the Cecchetti's (1998) model, moving leftwards on the frontier involves raising α , the policy preference for inflation stabilization. One crucial determinant of policy preferences for inflation stabilization is the institutional design of the monetary policy framework.

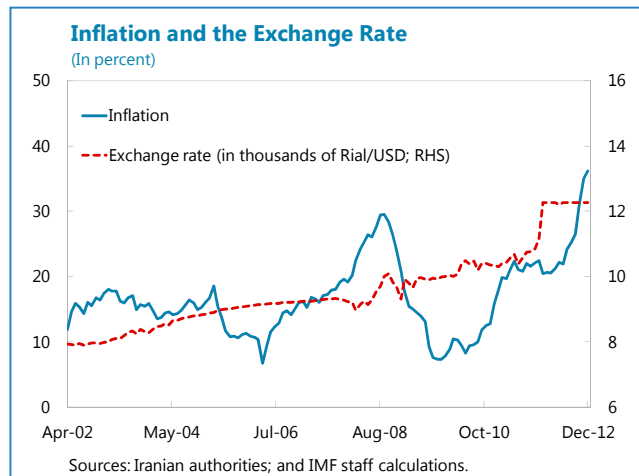
10. **The policy response of 2011–12 reflects the intrinsic tensions that arise when large supply shocks hit the economy and the monetary authorities face competing goals. In particular:**

- ***The official mandate for monetary policy contains several goals that are often times competing.*** The Monetary and Banking Act of 1960 lays out the official mandate of the CBI in conducting monetary policy, specifically: (i) maintaining a stable exchange rate; (ii) keeping the balance of payments in equilibrium; (iii) facilitating trade; and (iv) raising economic growth. The legal mandate does not enunciate whether all four goals carry the same importance, and how to deal with possible conflicts between them. Price stability, the overriding monetary policy objective for most central banks, does not appear.
- ***The institutional decision-making process limits the CBI's operational independence.*** The government and the private sector figure prominently in the Money and Credit Council (MCC), the body responsible for deciding on the monetary policy stance. It counts 13 members, composed of three monetary policy experts (including the CBI Governor as chairman) and ten representatives from government and the private sector. Voting is by simple majority. Although the implementation of the monetary policy stance lies legally in the ambit of the CBI, the CBI does not possess full control over all the instruments in the monetary policy toolbox. The MCC, not the CBI, determines the level of interest rates that the CBI charges for its standing facilities and the rate of return on participatory notes, a liquidity-absorbing instrument. Similarly, specialized banks receive subsidized funding from the CBI to finance government-mandated social programs (particularly housing), which affects base money. Foreign exchange intervention is under the control of the CBI, but international sanctions have impaired the scope to use reserves for sterilization purposes. Reserve requirements and prudential measures are the remaining tools. But the effectiveness of these instruments is limited if the CBI cannot exert full control over base money and interest rates to back them up.

- **The multifaceted mandate complicates accountability.** The General Assembly of the CBI is the official body responsible for scrutinizing and appraising the performance of the CBI in fulfilling its mandate. Ideally, the starting point of the appraisal should be a view as to whether the CBI met its official goals. However, if the CBI cannot attain all four official goals at the time, performance appraisals need to evaluate the trade-offs between the goals. Without legal guidance for establishing a goal hierarchy, the General Assembly faces the difficult task of judging performance without a suitable yardstick.

11. Iran’s most important de-facto nominal anchor, the exchange rate, has not always been an effective signaling device. Since the unification of the foreign exchange market in 2002,

the exchange rate has been the CBI’s de-facto nominal anchor that constraints the conduct of monetary policy. However, the exchange rate is not necessarily an optimal nominal anchor in an economy such as Iran. The multitude of official monetary policy objectives complicates the interpretation of exchange rate targets (Mishkin, 1999). In the period 2006–08, for example, the relatively stable exchange rate could signal different stances of monetary policy—a more neutral stance in meeting the legal mandate of keeping the exchange



rate stable or a more expansionary stance in an attempt to boost short-term growth. Given that inflation rose rapidly during that period indicates that the policy stance was likely too expansionary. More generally, inappropriate monetary policy stances can continue for some time under exchange rate targets if capital is not perfectly mobile. In Iran, restrictions on capital outflows blunt the automatic feedback loop between monetary policy and the exchange rate because residents cannot freely balance their rials and foreign currency portfolios.

- 12. In sum, there is scope to rethink Iran’s current monetary policy framework to strengthen its credibility and effectiveness.** Changing the design of the monetary policy framework can give a greater priority to inflation stabilization. This step would allow Iran to take advantage of its flat inflation/output variability frontier, bringing down inflation without significant output costs. The following reform options stand out: (i) clarifying the mandate with a clear commitment to price stability; (ii) strengthening the operational independence of the CBI; (iii) enhancing accountability mechanisms; and (iv) improving the communication with the public about the monetary policy stance and inflation goals.

13. **Examining the experience of emerging markets that successfully overcame periods of high inflation can provide valuable options to rethink the framework.** The experiences of other historically high-inflation countries, such as Brazil, Indonesia, Kazakhstan, Mexico, Malaysia, Nigeria, Turkey, and Saudi Arabia (Appendix II), offer valuable lessons to stabilize inflation and output through institutional reform. Salient elements in their reform agenda include:

- ***A public announcement of central bank operational independence typically marks the beginning of the reform.*** Independence tends to take effect immediately with the announcement, although the legislative process that enshrines central bank independence in law may take longer. The new central bank legislation typically prohibits central banks from financing government deficits and insulates the operations of central banks from political influence. However, the government remains responsible for setting official goals; the central bank is only independent in its operational pursuit of these goals. One crucial element in this regard is the dissociation of appointments of central bank management from the political election cycle. Additionally, the new legislation grants central banks the authority to deploy with greater degrees of freedom all available instruments in the pursuit of monetary policy goals.
- ***To foster transparency and accountability, price stability usually turns into the primary, if not sole, objective of monetary policy.*** Making price stability the overriding objective of monetary policy is appealing because price stability is easily understood and consistent with notion that monetary policy cannot affect real variables such as output in the long run (Friedman, 1968). Output and employment can be explicit secondary goals, as in the case of Malaysia and Turkey. With clear and easily understood targets, governments and parliaments are better placed to hold monetary authorities accountable for macroeconomic outcomes. For example, in Brazil, Indonesia, Mexico, and Turkey, the governor of the central bank appears before parliament to explain and defend monetary policy choices. In the same vein, most central banks in the sample have started to publish economic reports for the public at regular frequencies that contain detailed assessments of the economy and forecasts of inflation, economic growth, and possible policy responses. The bodies deciding on the monetary policy stance, typically committees, also publish minutes of their meetings on a regular basis.
- ***Short-term interest rates move to the center as the main policy instrument.*** Quantitative monetary targets lose in relevance in monetary policymaking, given that base money becomes endogenous when central banks set short-term interest rates. The instability of money demand has been an additional reason for deemphasizing quantitative targets. Changes in money demand make the relationship between money on the one hand and inflation and output on the other hard to predict.

14. **The rest of the overall macroeconomic policy framework needs to be supportive of monetary policy reform.** The most significant structural reform that accompanied and facilitated monetary policy reform was the commitment to overcome fiscal dominance. Fiscal dominance implies that the fiscal policy stance effectively determines the monetary policy stance as well (Sargent and Wallace, 1981). The channels through which fiscal policy affects monetary policy vary

across countries, but often involve central bank financing of government deficits and the creation of liquidity due to repatriations of foreign exchange-denominated commodity revenue. To sever the link between the fiscal and monetary sectors, the government has to make a strong commitment to fiscal discipline. Essential measures in this context are modernizing public financial management systems, reforming tax codes, and limiting central bank financing of fiscal deficits.

15. **The case of Turkey is particularly instructive in that it shows that institutional reforms can change the tradeoff between inflation and output.** Turkey grappled with chronically high inflation for much of the 1990s. Following a sharp reversal of capital flows and an associated currency crisis in early 2001, the Turkish authorities overhauled their monetary policy framework (see Box 1), with great success. Estimating Cecchetti's model (1998) model for Turkey during the pre-crisis period results in estimates of $\alpha=0.24$ and $\gamma =0.96$. Remarkably, in the post-crisis period, α rose to 0.71, close to a threefold increase. Likewise, γ jumped to 1.66, suggesting that the aggregate supply curve flattened and control over output movements improved. This case study shows how institutional reform can dramatically bolster the credibility of monetary policy and give the monetary authorities greater control over economic growth.

B. Concluding Remarks

16. **A flat inflation/output variability frontier reduces the costs of disinflation.** In principle, a flat frontier is a double-edged sword. At times of negative supply shocks, it makes it very costly to attempt to stabilize output. For a given reduction in relative output variability, inflation variability surges disproportionately more. The policy response in 2011-12 illustrates this point. Inflation variability surged, yet without preventing the significant downturn in output (and increase in output variability). This pattern is consistent with the results of Jalali-Naini and Naderian (2012) who find that monetary policy is not a reliable instrument to boost output in Iran, instead primarily affecting inflation expectations. However, the flat shape of the frontier turns into a significant advantage if the objective is to bring down inflation variability from high levels. The results in this paper suggest that inflation stabilization in Iran could succeed at negligible output costs. The reason is that the aggregate supply is steep, and changes in demand will predominantly affect prices as opposed to output.

17. **Revamping the monetary policy framework will help to permanently reduce inflation variability.** The shocks of 2011–12 exposed several constraints in the current monetary policy framework. Reforms to the monetary policy framework in other emerging economies that once suffered from chronically high inflation variability offer valuable lessons for Iran. By reorienting the CBI's mandate on price stability, bolstering its independence, and enhancing the transparency and accountability of its operations, the authorities could reap large benefits in terms of controlling inflation variability while avoiding large swings in output.

Box 1. The Turkish Experience in Reforming Its Monetary Policy Framework

Turkey suffered a decade of significant economic volatility in the 1990s. Average economic growth was 4 percent, involving swings from 9 percent (1990) to –5 percent (1994). Inflation averaged close to 80 percent per year. Following the liberalization of the capital account in 1989, surging capital inflows put upward pressure on the real exchange rate and worsened the current account. Under weak financial regulation, banks took on excessive interest rate and exchange rate risks by relying heavily on short-term external borrowing.

In November 2000, the failure of one domestic bank caused a widespread liquidity crunch. The following months saw a marked deterioration in the political climate, eventually leading to full-blown crisis of confidence in February 2001. Overnight interest rate shot up to around 5,000 percent (annualized) and the stock market lost 40 percent of its market capitalization. Emergency liquidity injection contributed to a sharp loss in foreign reserves. To stem the balance of payment crisis, the authorities decided to float the Turkish lira later in February. The currency depreciated more than 50 percent by the end of the year.

The economic ramifications of the crisis were large. Inflation approach pre-crisis heights and public debt rose to close to 100 percent of GDP as a consequence of bank recapitalizations. Real GDP declined 5 percent peak-to-through and unemployment rate climbed into double digits in the aftermath (up from 6 percent prior to the crisis).

The twin pillars of the post-crisis reform strategy were disinflation and restoring fiscal sustainability. Immediately after the crisis, the Central Bank of Turkey (CBT) gained full operational independence with amendment to the central bank law. The law established: (i) price stability as the CBT's primary policy objective; (ii) accountability of the CBT's senior management for maintaining price stability before the government and parliament; (iii) a monetary policy committee (MPC) responsible for monetary policy decision-making and providing information to the public on a regular basis; and (iv) a ban for the CBT of lending directly to the Treasury from November 2001.

In addition, the CBT adopted an implicit inflation targeting (IT) regime. As an interim step, CBT targeted base money while using inflation as an implicit nominal anchor in the period of 2002-05. The new regime clearly specified that in the case of inconsistencies between monetary and inflation targets, the CBT would have to revise the money targets. Under this framework, inflation fell from 29.7 percent in 2002 to 7.7 percent in 2005; at the same time, growth actually strengthened from 5 to 8 percent. A fully-fledged IT regime became operational in 2006.

Ending fiscal dominance was a critical element in the reform strategy, helping to break entrenched inflationary expectations. A new government came into office in 2002 on the platform of fiscal consolidation. Supported by financial assistance from the IMF, the government turned its attention to generating sustained primary surpluses by means of increasing tax revenue and cutting inefficient government spending. The Public Financial Management and Control Law of 2003 further strengthened the overall fiscal framework, improving budget execution, control, and medium-term planning.

Appendix I. Model to Illustrate the Tradeoff Between Inflation and Output Stabilization

1. The tradeoff between inflation and output stabilization arises because supply shocks move output and inflation in opposite directions. A simple, stylized macroeconomic model by Cecchetti (1998) helps to illustrate the tradeoff. The model posits that supply and demand shocks and monetary policy determine output and inflation. Concretely:

$$y_t = \gamma(bm_t + d_t) + s_t \quad (1)$$

$$\pi_t = (bm_t + d_t) + \omega s_t \quad (2)$$

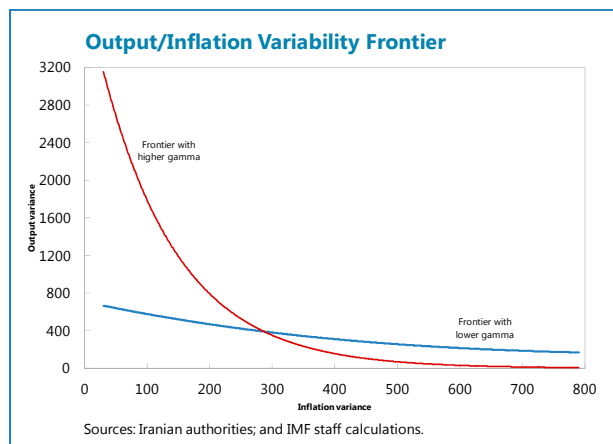
where y_t is non-oil output, bm_t base money (the monetary policy instrument), d_t and s_t are demand and supply shocks, γ and ω are parameters that measure the relative responses of output and inflation to demand and supply shocks. γ also gauges the relative impact of policy shocks (changes in bm_t on non-oil output and inflation, where the impact is normalized to one in equation (2)). One economically meaningful interpretation of γ is to relate it to the inverse of the aggregate supply curve, with higher values indicating a flatter, or more elastic, aggregate supply curve. Equations (1)–(2) capture the notion that the authorities can use monetary policy to neutralize demand shocks. But faced with supply shocks, which have opposite effects on non-oil output and inflation, they have to decide which of the two to stabilize. Assuming that the authorities care about keeping both inflation and non-oil output close to their target, the following loss function represents their preferences:

$$\mathcal{L} = \alpha(\pi_t - \pi^*)^2 + (1 - \alpha)(y_t - y^*)^2 \quad (3)$$

The model implies that degree to which they offset supply shocks depends on α , the relative preference for inflation stabilization, and the parameters γ and ω . In equilibrium, the relative variability of output and inflation describe a frontier given by:

$$\frac{\sigma_y^2}{\sigma_\pi^2} = - \left[\frac{\alpha}{\gamma(\alpha-1)} \right]^2 \quad (4)$$

The intuition underpinning equation (4) is straightforward: a higher preference for inflation stabilization α will lead to higher non-oil output variability relative to inflation variability, and a higher sensitivity of non-oil output to monetary policy γ will lower output variability relative to inflation variability. Diagrammatically, changes in α involve a move along the frontier, whereas different values for γ tilt the frontier.



2. The ratios of non-oil output and inflation variability are observable, provided the targets of both variables are known. There are two ways of fixing the targets of inflation and non-oil output in equation (3), using: (i) the official targets embedded in the government's successive five-year plans, or (ii) the trend component of the HP-filtered series of inflation and non-oil output. The model's results are insensitive to the choice of targets because both options deliver very similar quantitative estimates.

3. The estimate of γ is equal to the ratio of the average impulse response of output to the average impulse response of prices to a shock to base money. The impulse response functions, in turn, derive from a three-variable vector autoregression (VAR) of base money, consumer prices, and non-oil output. The identification scheme of the structural monetary policy shocks follows a standard Cholesky decomposition, with the ordering base money, prices, and output (different orderings give identical results). To control for the effect of shocks in international oil markets on the supply side of the Iranian economy, an alternative specification includes the value of oil exports as an exogenous variable. The results of this alternative specification give a virtually identical estimate of γ .

4. With the observed ratio of non-oil output and inflation variability and an estimate of γ at hand, equation (4) gives an estimate of $\alpha=0.49$. This estimate implies that the Iranian authorities assigned equal importance to stabilizing inflation and output around their targets. Note that an equal weight on minimizing output and inflation variability in equation (3) do not imply that the empirical ratio of these variabilities will be equal to one. The structure of the economy, captured by the aggregate supply parameter γ , matters as well. Remember that a higher γ means that output is relatively elastic, making inflation stabilization more costly. So for given variability ratios, a higher γ implies a higher α . Countries whose economic structure makes it costly to reduce inflation variability must have a higher preference for stabilizing inflation to achieve a given variability ratio.

Appendix II. Monetary Policy Regimes

	Primary Policy Objective	Nominal Anchor	Accountability Mechanism	Main Policy Instrument	Independence
Brazil	Price stability	Inflation	If inflation breaches the target, the Governor is required to write an open letter to the Minister of Finance explaining the reasons for missing the target, as well as the measures and time frame to bring inflation back to target.	Collateralized overnight interbank rate target.	The Board of Directors consists of the Governor and eight Deputy Governors. The Governor is appointed by the President and does not have a fixed term.
Indonesia	Price stability	Inflation	Bank Indonesia (BI) submits quarterly monetary policy reports to the Indonesian Parliament. If the inflation target is missed, the BI will jointly with the government present an explanation before parliament and the public.	Overnight interbank rate target.	The Board of Governors consists of the Governor, a Senior Deputy Governor, and between four to seven Deputy Governors. The Governor and the Senior Deputy Governor are nominated and appointed by the President upon the approval of the House of Representatives. The Deputy Governors are nominated by the Governor and appointed by the President upon the approval of the House of Representatives. Members of the Board serve five-year terms and may be reappointed for one additional term.
Kazakhstan	Price stability	Exchange rate (U.S. dollar)	The National Bank of Kazakhstan (NBK) submits annual reports to the President for approval.	Issuing short-term notes and taking bank deposits, providing refinancing loans and conducting Repo operations.	The Supervisory Board consists of nine members. The Governor of the NBK, appointed by the President and approved by Parliament for a six-year term; five officials of the NBK, appointed and dismissed by the Governor; one representative of the President, appointed and dismissed by the President; and two representatives of the Government, appointed and dismissed by the Government.
Mexico	Price stability	Inflation	Banco de México (BM) sends to both the President and Congress: (i) a document setting out the monetary policy stance to be implemented in the current year in January; (ii) a report on monetary policy implementation in the preceding year in April; and (iii) a report on monetary policy implementation during the first half of the current year in September. In addition, the BM submits quarterly reports on inflation and economic development to Congress. Congress may also summon the Governor to report on BM's policies and activities.	Overnight interbank rate target.	Members of the Board of Governors are appointed by the president, approved by the senate, and cannot be removed from their posts at the president's discretion. The Governor serves for six years, starting in the middle of a six-year presidential term. The Deputy Governors serve for eight years and are replaced alternately every two years.
Malaysia	Price stability	Unspecified	The Board submits to the Minister of Finance annual reports. The report, along with the Bank's financial statements, will be presented before the Senate and the House of Representatives.	Overnight interbank rate target.	The Board of Directors consists of the Governor, three Deputy Governors, and five other private- and public-sector representatives. The Governor is appointed by His Majesty for a term of five years. The Deputy Governors are appointed by the Minister of Finance for a term of three years. Other Directors are appointed by His Majesty on the advice of the Minister of Finance for a term of three years. Board members are eligible for reappointment.
Nigeria	Price stability and sustainable economic growth.	Broad Money (M2).	The Bank is required to submit to the President a report on its operations within four month from the close of each financial year, and submit to the President a copy of its annual accounts within two month after the close of each financial year.	Open market operations in T-bill market.	The Board of Directors consists of: the Governor and four Deputy Governors appointed by the President for a term of five years, five other members appointed by the President for a term of three years, and the Permanent Secretary of the Federal Ministry of Finance.
Saudi Arabia	Price stability (incl. exchange rate).	Exchange rate (U.S. dollar).	The Saudi Arabian Monetary Agency renders to the government, through the Minister of Finance, a copy of the half-monthly and annual statements.	Repo and reverse-repo rates.	The Board of Directors is chaired by the Governor, and consists of the Vice-Governor and three non-government officials. Board members are appointed for five years by a Royal Decree, in accordance with the nomination of the Minister of Finance and the approval of the Council of Ministers. Board members cannot be removed from office except by a Royal Decree issued in the same matter.
Turkey	Price stability.	Inflation.	The Governor of the Central Bank of Turkey (CBT) makes biannual presentations before the Council of Ministers and the Planning and Budget Commission of the Grand National Assembly to provide information about CBT activities and monetary policy implementation. If the CBT misses the inflation target, it is required to explain the reasons in writing to the Government, lay out the measures to be taken, and disclose the information to the public.	Benchmark one-week repo rate.	The Board consists of the Governor and six members to be elected by the General Assembly. The General Assembly consists of shareholders registered in the share book of the Bank. Board members serve a term of three years. One third of the members are renewed each year. Reelection of previous members is permitted.

Sources: IMF Annual Report on Exchange Arrangements and Exchange Restrictions 2012; Central Bank websites; and Central Bank laws.

References

- Cecchetti, Stephen G., 1998, "Policy Rules and Targets: Framing the Central Banker's Problem," *Federal Reserve Bank of New York Economic Policy Review*, Vol. 4, pp. 1-14.
- Cecchetti, Stephen G., and Michael Ehrmann, 2002, "Does Inflation Targeting Increase Output Volatility?: An International Comparison of Policymakers' Preferences and Outcomes," in *Monetary Policy: Rules and Transmission Mechanisms*, edited by Norman Loayza and Klaus Schmidt-Hebbel, 1(4), chapter 9, pp. 247-74.
- Clarida, R., Jordi Galí, and Mark Gertler, 2000, "Monetary Policy Rules and Macroeconomic Stability: Evidence And Some Theory," *The Quarterly Journal of Economics*, 115(1), pp. 147-80.
- Friedman, Milton, 1968, "The Role of Monetary Policy," *American Economic Review*, Vol. 58, pp. 1-17.
- Jalali-Naini, A. R., and Mohammad A. Naderian, 2012, "Central Bank Lending, Inflation and Output Dynamics in a Limited Participation Model," *The Journal of Money and Economy*, Vol. 7, pp. 41-66.
- Mankiw, N.G., and Ricardo Reis, 2011, "Imperfect Information and Aggregate Supply," in: *Handbook of Monetary Economics*, edited by Benjamin M. Friedman and Michael Woodford, 3A, pp. 183-229.
- Mishkin, Frederic S., 1999, "International Experiences with Different Monetary Policy Regimes," *Journal of Monetary Economics*, Vol. 43, pp. 579-606.
- Sargent, Thomas J., and Neil Wallace, 1981, "Some Unpleasant Monetarist Arithmetic," *Quarterly Review Federal Reserve Bank of Minneapolis*, Fall, pp. 1-17.
- Taylor, John B., 1993, "Discretion Versus Policy Rules in Practice," *Carnegie-Rochester Conference Series on Public Policy*, Vol. 39, pp. 195-214.

THE NATIONAL DEVELOPMENT FUND OF IRAN: ISSUES AND CHALLENGES¹

1. **Iran, like other resource-rich developing countries face the challenges of transforming resource wealth into other assets that support sustained development, while also maintaining mechanisms to avoid the boom-bust cycles that stem from volatility in natural resource revenues** (IMF, 2012). Since 2000, when Iran established its Oil Stabilization Fund (OSF) to address the fiscal stabilization challenge, the country has embarked on developing the needed institutions to address these challenges. In 2010, Iran established the National Development Fund of Iran (NDFI) to improve the intergenerational allocation of its hydrocarbon wealth. This chapter discusses the NDFI's role in Iran's macroeconomic and fiscal policy frameworks and challenges to ensure the fund can meet its main objectives.
2. **Reforms to the fiscal policy framework could aim to strengthen its countercyclical role and enhance macroeconomic coordination.** A revised fiscal framework that is supported by the OSF and the NDFI could better balance the goals of macroeconomic stability, intergenerational equity, and development. For this, OSF resources could be replenished soon to support noninflationary budget financing and build buffers for future shocks. Decisions on how to save and invest NDFI resources could be better coordinated explicitly with macro policies and underpinned by more explicit safeguards and transparency. Adopting a multi-year budget planning and expanding the coverage of the general government could enhance the operational conduct, monitoring, and accountability of fiscal policy and, therefore, contribute to improved long-term macroeconomic stability to better support economic growth.
3. **This chapter reviews international experience on the design and integration of SWFs with the fiscal framework and offers some suggestions for consideration.** The international experience and literature offer lessons for improving the design and strengthening the management of the NDFI, including by better integrating it into Iran's short and long-term fiscal frameworks. A well designed development fund can play an important role in a comprehensive economic reform aimed at increasing productivity, employment and economic growth.

A. The NDFI in the Context of Similar Institutions in Other Countries

4. **The NDFI is a subclass of SWFs that undertakes domestic activities to contribute to national economic development.** SWFs are defined in a number of ways. The definitions have different focus. This diversity of approaches makes international comparisons of the institutions, their activities, size, and market impact difficult. Ang (2010) defines them as "a mechanism for moving country's savings and investments from present to the future." Monk (2008) sees SWFs as

¹ Prepared by Roman Zyteck.

“government owned and controlled (directly or indirectly) investment funds that have no outside beneficiaries or liabilities (beyond the government or the citizenry in abstract) and that invest their assets, either in the short or long term, according to the interests and objectives of the sovereign sponsor.” Balding (2008) defines SWFs as “pools of capital controlled by a government or government-related entity that invests in assets seeking returns above the risk free rate of return.”

5. **The number of countries that established or contemplate establishing national wealth funds has risen rapidly since mid-2000.** A number of factors contribute to the interest in starting and expanding SWFs, including the rise of global imbalances and long-term oriented fiscal policies in some noncommodity exporting countries and regions, which have led to the accumulation of large fiscal and external account surpluses. These surpluses have created the need to develop novel approaches and institutions to manage them.² Iran’s large hydrocarbon resources and export potential are likely to generate large external surpluses for years to come, justifying the creation of the NDFI. Also, the uncertainty about the sustainability of public finances of some developed countries and the low yields on safe assets, have encouraged search for alternative investments.

6. **Against this background, SWFs are classified into** (i) stabilization funds, where the primary objective is to insulate the budget and the economy against commodity price swings; (ii) savings funds for future generations, which aim to convert nonrenewable assets into a more diversified portfolio of assets and mitigate the effects of Dutch disease; (iii) international reserve investment corporations, established to increase the return from official reserves; (iv) development funds, which typically help fund socio-economic projects or promote industrial policies that might raise a country’s potential output growth; and (v) contingent pension reserve funds, which provide for contingent pension liabilities on the government’s balance sheet, but are funded from sources other than individual pension contributions.³ Most funds, like the NDFI, have multiple objectives.

B. The NDFI in the Iranian Fiscal Framework

7. **The NDFI was established in Iran’s Fifth Five-Year National Development Plan (March 21, 2010 to March 20, 2015).** Articles 80–84 of the Plan established the NDFI and specified its structure. The NDFI has three objectives: (1) Save part of the oil and natural gas rents for use by future generations; (2) Increase income returns from the accumulated savings; and (3) Support Iran’s economic development and diversification. NDFI’s revenues have been defined as a specific percentage of Iran’s oil and gas export revenues. In 2011, the NDFI received 20 percent of oil and gas revenues. The share rose to 23 percent in 2012 and 26 percent in 2013. It is expected to reach 32 per cent in the long term.

² Aizenman and Glick (2008), Ang (2010), Blackburn and others (2008), Dixon and Monk (2010), among many others offer interesting discussions on the objectives for setting up SWFs.

³ Theoretical and policy research offers advice on how to establish a SWF, once the decision to establish it has been made (Al-Hassan and others, 2013; and Udaibir and others, 2010).

8. **The NDFI complements the Oil Stabilization Fund (OSF), which was launched in 2000 to play primarily a fiscal stabilization role.**⁴ The OSF was to save all revenues from oil exports in excess of the budget allocation. The OSF, effectively only an account at the CBI, was allowed to lend up to US\$10 billion to banks for on-lending to the private sector. In practice, the OSF has not achieved its main stabilization and sterilization role. In contrast to the OSF, the NDFI has been fully institutionalized. The NDFI has its own Board of Trustees, Operating Board of Executive Directors and is subject to professional oversight from the Committee of Supervisors. On June 26, 2012 the NDFI's Board of Directors approved detailed Manual of Terms and Conditions for Granting Facilities. The NDFI has its own staff and monthly publication that provides broad information on the value of its assets and allocation of loans by the intermediating commercial banks (agents) and sectors of the economy, the ultimate recipients of loans.

Prioritizing a stabilization role

9. **There is scope to improve the interactions between the NDFI and Iran's fiscal framework.** The NDFI, the OSF, and the general government rely on the same revenue source—oil and gas exports. Therefore, the funding rules for each entity need to be clearly prioritized and coordinated. Also, NDFI's domestic development investment mandate needs to be well integrated with the public sector's development spending and financing needs. A proper design and coordination would make macroeconomic management easier and contribute to overall macroeconomic stability.

10. **Therefore, NDFI savings for future generations need to be aligned with Iran's general government funding needs to help improve macroeconomic stability.** Iran's fiscal revenues and fiscal balance are heavily dependent on oil and gas export income. A fall in oil and gas prices or export volumes has an immediate impact on the budget. Theoretically, the fiscal shortfall should be financed from past fiscal savings placed with the OSF. However, the OSF has not accumulated reserves, while Iran has had no access to external debt financing, and there has been limited demand for public debt in the domestic financial market. At the same time, under the current funding rules and irrespective of the fiscal and overall macroeconomic situation, the NDFI receives a fixed percentage of all oil and gas revenues. The fund has accumulated significant financial savings for use by future generations at the time when Iran had to respond to a fiscal revenue shortfall by drastically cutting public spending and resorting to inflationary financing. The government had to make deep and costly in the longer term cuts in capital spending. At the same time, the high inflation and the resulting volatility in the foreign exchange market undermined NDFI's ability to promote domestic private sector development.

⁴ IMF (2008) examined the operations of the OSF and provided recommendations on how to strengthen the OSF's role in macroeconomic management by focusing on its stabilization objective and integrating its operations with the central government budget in the context of a rolling medium-term fiscal framework.

11. **One option could be to adjust the NDFI funding formula to take into account the general government fiscal position.** The NDFI should not be used to impose fiscal discipline on the general government, as is currently the case. Rather, fiscal discipline should be at the core of the government's policymaking. Fiscal discipline should lead to fiscal surpluses and transfers to the OSF and the NDFI. The fiscal formula for using hydrocarbon resources should ensure that the use of revenues from hydrocarbon exports is countercyclical. Specifically, when oil prices and exports are above trend, the excess revenues should be saved in the OSF first. Only when the OSF is adequately funded, fiscal surpluses should be transferred to the NDFI. When oil prices and output fall, forcing the government to borrow, the savings in the OSF and NDFI could be tapped to minimize the negative impact of government's borrowing on the economy. Maintaining high fiscal discipline and building up stabilization reserves could be particularly important in the near term, following years of high oil and gas export prices.

Financing public capital infrastructure

12. **At present, there are few clear guidelines or specific goals guiding NDFI's role in supporting national development.** The NDFI is not allowed to lend to the government nor the public sector. Its lending is to promote private sector development. Iranian commercial banks are responsible for screening borrowers and their projects, though the loans are authorized by the NDFI and disbursed mostly as payments for imports. As oil revenues to the government fell in the past two years, the NDFI has come under pressure to support the economy, with risks to the quality of projects and incentives for rent seeking.

13. **To address part of this problem, the NDFI could be allowed to support well designed public infrastructure projects.** Some SWFs have become active contributors to the development of public goods, including large national infrastructure projects (Clark and others, 2011). The NDFI could engage in financing of projects that offer high social returns and, therefore, are critical for national development. In particular, efficiently designed and implemented public-private partnerships (PPP) could help. An effective PPP model would include strong incentives for private partners to improve the timeliness and quality of the implementation of selected projects compared to the projects implemented directly by the government under its national development program. To pursue such projects, the NDFI would need to develop and implement effective mechanisms for assessing potential projects for their private and social returns and be able to monitor the selected projects.

C. National Insurer, Wealth Builder, and Promoter of National Development

Insurer of macroeconomic stability and lender of last resort

14. **The NDFI could offer a fiscal and external buffer to help mitigate temporary shortfalls in fiscal and export revenues.** Such centralized pool of savings can increase macroeconomic stability and the country's international credibility, effectively making the use of the buffer highly unlikely. NDFI's assets could be seen as another, supplementary to central bank's international reserves, financial buffer that could be relied upon and drawn on under specific rules or conditions,

in times of economic crisis.⁵ The availability of such reserves would improve Iran’s risk ratings and reduce future international borrowing costs. Some of the countries that are best rated for macroeconomic stability have insured the good outcome of their prudent policies with sizable sovereign fund assets. The buildup of external reserves in most East and South East Asian countries in the aftermath of the Asian crisis, as well as in Norway and Chile, helped them preserve macroeconomic stability.

15. The NDFI would need to ensure that a large share of its assets, relative to Iran’s imports and debt service payments, is invested in reliable and reasonably liquid securities.

Also, that part of the investment portfolio would need to be well disclosed, ideally audited by reputable independent (including external) auditors, to ensure the adequate reporting of reserves. The NDFI could continue to benefit from the experience and practices of the SWFs that score high on the SWF’s Generally Accepted Principles and Practices (Santiago Principles), in particular in the principles related to the Transparency and Accountability section of the scoreboard.⁶ Iran could emulate the SWFs that routinely score high in this area: Norway’s Government Pension Fund Global (GPF), New Zealand’s Superannuation Fund, Chile’s Economic and Social Stabilization Fund, Alaska’s Permanent Fund, or Australian Future Fund. Singapore strategically discloses some but not all of its reserve and SWF assets.⁷ The NDFI should continue to improve its governance to earn the trust of other countries and investors.

Long term national wealth builder

16. Well managed assets tend to earn higher returns compared to traditional reserve investments. SWFs have been created to earn higher returns on assets. Long-term investments in equities and lower quality bonds should produce returns that include equity premiums, in addition to the return on riskless assets. Accomplishing such diversification in a cost effective manner is not easy for the time being, and the foreign part of NDFI’s assets will need to remain with the CBI.

⁵ Clark and Monk (2009) study the stabilizing role of the Government of Singapore Investment Corporation, the country’s insurer of last resort.

⁶ See: International Working Group (IWG) of Sovereign Wealth Funds (2008) for the full list and discussion of the Santiago Principles; and Bagnall and Truman (2013) for the elements of the scoreboard. The Santiago Principles and the work of the International Forum of Sovereign Wealth Funds (IFSWF) represent “a compromise and, as a result, are not as rigorous as outsiders would prefer. For example, they are not explicit about what information should be publicly disclosed. In addition, 10 of the 30 Santiago Principles and subprinciples have little to do with the public and, rather, focus on relations between the fund and its government. Managers of SWFs, like central bankers that are often their philosophical cousins if not their de facto brothers and sisters, treasure their independence from their governments, which is a questionable long-term posture for both” (Bagnall and Truman (2013).

⁷ <http://www.gic.com.sg/en/faqs/search/200-governance#43>.

17. **To earn the full benefit from holding assets in a SWF, the NDFI could continue to develop strong in-house corporate management capacity.** As a new organization, the NDFI has entered a business where the breadth and depth of knowledge and the experience in financial markets and macro- and micro-economics is in short supply and commands high value in the labor market. At least initially, Iran may have to hire international managers and open offices in key financial centers to be able to attract and recruit the right staff. Setting compensation packages could be another challenge for a public institution. Norway's GPF and the two Singaporean funds offer valuable lessons on how to develop in house capacity and what challenges it will likely face. The most important measure will be to ensure merit-based recruitment of staff of highest integrity and ethical standards, and open the fund to international professional staff.⁸ Norway's GPF manager, the NBIM, reports employing 340 staff from 27 countries in its offices in Oslo, London, New York, Shanghai, and Singapore.⁹ Singapore's Temasek has 450 staff from 23 countries that bring in diverse experiences, knowledge and perspective to build an institution of character and distinction.¹⁰ Singapore's Government Investment Corporation (GIC) has 1200 staff from 30 nationalities in its nine offices around the globe.

18. **NDFI's managers and staff must understand the full extent of the challenges faced by asset managers.** They need to put in place investment policies and operational practices that shield the NDFI from the risks associated with active asset management. Few asset managers tend to succeed in outperforming broad market indices in the long term. The Santiago Principles focus mostly on disclosure of investment practices; but they do not recommend best practices. The best practice for long-term investors, such as over-generational equity funds, has traditionally focused on building portfolios that mostly track broadest possible market indices, to match long-term market returns, while minimizing management and trading costs. Periodic portfolio rebalancing helps too.

19. **On the practical side, Norway's GPF offers a good model to follow.** First, GPF's assets are managed by a professional asset management team, Norges Bank Investment Management (NBIM). Second, the management strategy has been focused on minimizing management and other costs. Third, GPF's assets are invested in a broadly diversified global portfolio. Fourth, the investment strategies rely on using a combination of passive index-based investments and some modest effort to generate small excess return of 25 basis points.¹¹

⁸ Monk and Bachher, (2012) stress the importance of in-house capacity building. Among other, SWFs should try to bring in a mix of young promising talent and experienced executives.

⁹ See: <http://www.nbim.no/en/About-us/>.

¹⁰ See: <http://careers.temasek.com.sg/careers/ourpeople>. Temasek's professional ethos and work ethics are rooted in the MERITT values: Meritocracy, Excellence, Respect, Integrity, Teamwork and Trust.

¹¹ See: <http://www.nbim.no/en/press-and-publications/feature-articles/2010/active-management-of-the/the-cost-of-active-management/> and Chambers, Dimson, and Ilmanen (2011).

20. **Chile offers an example of a prudent learning-by-doing strategy.** Two Chilean funds, the Pension Reserve Fund and Economic and Social Stabilization Fund, rely on a Financial Committee of six independent investment professionals elected for two-year terms to offer guidance on the fundamental aspects of the investment policy for the sovereign wealth funds.¹² Both funds have gradually expanded investments beyond the safety of the high rated sovereign debt and money market funds, to ensure they have adequate in-house capacity to take on higher risk profile.

Promoter of domestic economic development

21. **The sovereign fund can be used to support local economic development.** The fund provides a pool of investable capital that can be used to finance domestic business expansion, corporate restructuring, startup companies, and infrastructure projects. So far, the NDFI implements its development mandate by using Iranian commercial banks to screen borrowers and projects. If past history is any indication of future performance, some of the Iranian domestic banks may not be able to maximize economic and social returns on the loans. If banks are unable to repay NDFI-funded loans because their borrowers default, the NDFI may become, by default, the insurer of the banking sector. It will take over the banks' nonperforming loans and may become the controlling shareholder in some of Iran's banks and their corporate clients.

22. **The NDFI could reconsider the way it supports domestic economic development.** Specifically, as the first priority, the NDFI should help finance budget deficits to reduce the damaging impact of the currently pursued inflationary financing. Some of this financing could be directed towards capital development projects, possibly under a well designed public-private partnership programs. Only after macroeconomic stability is restored should the NDFI engage in supporting the private sector. This could be done through a number of mechanisms, such as the currently in place lending through banks, but also through participation in special purpose funds, such as private equity and venture funds. The use of such specialized funds that supplement financing with active involvement in corporate management will help address the single biggest challenge facing the Iranian companies: the need to restructure to restore international competitiveness when the massive subsidies from low cost energy, negative real interest rates, and protection from foreign competition are phased out.

23. **Furthermore, the NDFI could eventually become more active in corporate restructuring.** Many of the privatized enterprises face limited pressure to deliver best performance. Their shares are either dispersed among numerous small investors or are held by large diversified domestic institutional investors. Both cases may give rise to agency problems and costs, misalignment of corporate managers' interests and incentives with the interests of shareholders (Fama and Jensen, 1983). In the former case, the dispersed investors are unable and not interested in pressuring corporate boards. In the latter case, the managers of the institutional funds lack

¹² See: www.hacienda.cl/english/sovereign-wealth-funds/financial-committee.html.

sufficiently strong incentives to enforce performance. To minimize agency costs, the NDFI will need to address the weaknesses of the agency relationship when the relevant stakeholders are not clear. For example, the NDFI will need to decide whether it strives to maximize social welfare of all Iranians, thus maximizing the value of all its assets, or rather the welfare of the city where it invests, the welfare of the company it invests in, or the welfare of the company's employees.

24. **Developing in-house private equity and venture capital management capacity could strengthen NDFI's effectiveness in promoting its domestic mandate.** To perform its national development function, the NDFI may need to develop in-house capacity to: (a) select the best outside managers for its portfolio companies and (b) actively manage at least some of its portfolio companies. The NDFI may draw on the experience of many funds around the world that have developed in-house private equity and real estate development teams. Singapore's Temasek's Enterprise Development Group "serves as a development engine, going beyond investing for growth to building for growth. The group focuses on mapping our future business value chain; staying abreast with innovation and macro business trends; and identifying and developing new business enterprises that have the potential to be global, regional or domestic champions."¹³ Similarly, Kuwait's Investment Authority (KIA), Abu Dhabi's Mubadala Development Company, Qatar Investment Agency's domestic investment arm Qatari Diar, or Malaysia's Khazanah Nasional Bhd pursue domestic development efforts, including investments in the SMEs.¹⁴

D. Design and Operational Issues

25. **There are a number of theoretical considerations and practical lessons from other countries that can inform the design and operations of the NDFI.** Singapore and Hong Kong offer lessons in fiscal prudence and overall economic management that Iran may consider. Alaska, Chile, and Norway offer sound fiscal models for establishing the fiscal rules and relations between the general budget and the SWF, and supporting the rules with the right institutions (Frankel, 2011). Norway offers good lessons for managing NDFI's external assets. Singapore and Malaysia's funds are examples of development funds to learn from. Some other funds offer lessons of what does not work.

26. **The available interdisciplinary research offers some important lessons. In particular:**

- **Setting clear objectives.** SWFs routinely face multiple objectives. This is unavoidable due to their public nature and exposure to diverse stakeholders. However, ensuring clarity and prioritizing the objectives can help guide daily operations. The NDFI's founding documents should clearly spell out its two objectives: over-generational saving and promoting economic development, in a hierarchical manner. The objective of saving hydrocarbon rents for future

¹³ See: <http://careers.temasek.com.sg/careers/ourteams/enterprisedevelopmentgroup>.

¹⁴ See: <http://www.khazanah.com.my/>.

generations should dominate and be supported by the objective of promoting national development. The two hierarchically imposed objectives will guide the fund's investment strategies, the buildup of its human capacity and organizational structure.

- **Separating political oversight from operational management.** The NDFI, like most SWFs, is a “social institution.” As such it is supervised by a political body (Board of Trustees) representing numerous stakeholders’ interests. Such representation is necessary to ensure political legitimacy of the institution. However, it also carries risks.¹⁵ Separating political oversight from asset management is the first and foremost challenge faced by a sovereign wealth fund. The executive branch of the Iranian government maintains a voting majority on the fund’s supervisory body. At the same time, to succeed in meeting its major objectives, the fund needs to be operated primarily on a commercial basis. Individual investment decisions must be driven by commercial considerations, not short-term political or even social needs. Therefore, it is important to ensure that the Trustees establish economically sound and internally consistent objectives for NDFI’s Board of Directors to follow and let the professional management implement them without further political interference. There are a number of ways to ensure the needed separation of political oversight from operational management:
 - **The fund’s operational management needs to be relatively immune from the changing balance of power in the legislature, government ministries, the central bank, and other politically elected bodies.**
 - **The fund’s founding documents need to clearly delineate the separation of oversight from operational management.** Singapore’s Government Investment Corporation (GIC) offers an example of such an arrangement. The GIC is a private company wholly owned by the Government of Singapore. It manages assets and is paid a fee for services. “The Government, which is represented by the Ministry of Finance in its dealings with GIC, neither directs nor interferes in the company’s investment decisions. It holds the board accountable for the overall portfolio performance.”¹⁶
 - **The founding documents need to be enforced.** Ensuring the legal separation is in theory easy but not in practice. Therefore, at the time the fund is formed, policymakers should envisage situations where a future small political majority could use the fund for its own benefit. Strong legal and practical safeguards to prevent this from happening are needed. Requiring super majority votes and an agreement from other independent bodies to change the fund’s rules could be one way of strengthening the fund’s independence.

¹⁵ Al-Hassan and others (2013) discuss theoretical and practical issues related to internal and external governance of SWFs.

¹⁶ See: <http://www.gic.com.sg/en/faqs/search/200-governance#38>.

- **Appoint the fund's operational leadership in a manner that maximizes its operational independence, while ensuring the fund pursues its main objectives.** Longer term, difficult to break—except for specific misbehaviors—management contracts offer one way to strengthen operational independence. The contracts must be supported with well designed incentives; and need to impose broad operational limitations, such as objectives, broad investment strategies, and risk limits.
- **Structure compensation rules to create strong long-term performance incentives for both members of the supervisory body and the fund's leadership and staff.** The contracts should have strong incentives for long-term profit maximization under acceptable risk profiles. While increasing the chances of reaching the long-term goals, the contracts should also have short-term performance benchmarks to create strong overall performance incentives and accountability.
- **Define the relationship between the fund and the sovereign's fiscal needs.** The funding formula is important to enhance the fund's independence. In the case of fiscal stabilization funds, knowing the relationship to the budget allows fund management to anticipate and respond to possible calls on assets. As a result, when the call for fiscal support arrives, the relationship between fund managers and its political overseers is likely to improve. Also, instilling high level of predictability of future inflows and government planned outflows instills confidence in the fund's operational stability, and fosters healthy relationship with its political supervisors.
- **Develop clear and transparent investment guidelines.** In particular, the guidelines should ensure proper domestic and external diversification of assets. The authorities may choose to commit the NDFI to follow the "indexers' model". Such simple investment strategy would commit the fund to buy a broadly diversified stock market portfolio. Under more active strategies, NDFI supervisors could impose single-company, single sector, and single country and region exposure limits, and set a matrix of limits on holdings of specific classes of securities. The investment guidelines will depend on the expected timing of calls on the fund's assets to support fiscal expenditure and other needs.

27. **Tax policies inside and outside Iran will influence NDFI's asset management strategies.** The available legal and tax literature discusses the international regulatory and tax policies and practices that affect SWF activities. Fleischer (2008) looks at taxation of SWF incomes and discusses challenges to ensure policy neutrality. Knoll (2009) emphasizes the benefits of cross-border diversification that encourage SWF to invest internationally, even in countries with less favorable tax policies and rates. Also, he shows that relative tax rates matter more than absolute tax rates, and develops recommendations for reforming the international tax system to make it more neutral and encourage cross-border capital flows, including from SWFs.

References

- Aizenman, Joshua, and Reuven Glick, 2008, "Sovereign Wealth Funds: Stylized Facts about Their Determinants and Governance," *NBER Working Paper* No. 14562.
- Al-Hassan, Abdullah, Michael Papaioannou, Martin Skancke, and Chneg Chih Sung, 2013, "Sovereign Wealth Fund: Aspects of Governance Structures and Investment Management," *IMF Working Paper* No. 13/231, (Washington: International Monetary Fund).
- Ang, Andrew, 2010, "The Four Benchmarks of Sovereign Wealth Funds," available at SSRN: <http://ssrn.com/abstract=1680485>.
- Bagnall, Allie E. and Edwin M. Truman, 2013, "Progress on Sovereign Wealth Fund Transparency and Accountability: An Updated SWF Scoreboard," Peterson Institute for International Economics, (December).
- Balding, Christopher, 2008, "A Portfolio Analysis of Sovereign Wealth Funds," Available at SSRN: <http://ssrn.com/abstract=1141531>.
- Blackburn, John, Brent Del Vecchio, Ira Fox, Carl Gatenio, Omar Khayum, and Daniel Wolfson, 2008, "Do Sovereign Wealth Funds Best Serve the Interests of Their Respective Citizens," University of Chicago Graduate School of Business, available at <http://ssrn.com/abstract=1309285>.
- Chambers, David, Elroy Dimson, and Sntti S. Ilmanen, 2011, "The Norway Model," available at SSRN: <http://ssrn.com/abstract=1936806>.
- Clark, Gordon L., Ashby H. B. Monk, 2009, "Government of Singapore Investment Corporation: Insurer of Last Resort and Bulwark of Nation-State Legitimacy," *Pacific Review*, Forthcoming. Available at SSRN: <http://ssrn.com/abstract=1397713>.
- Clark, Gordon L., Ashby H. B. Monk, Ryan Orr, and William Scott, 2011, "The New Era of Infrastructure Investing," available at SSRN: <http://ssrn.com/abstract=1837813>.
- Das, Udaibir S., Adnan Mazarei, and Han van der Hoorn (editors), 2010, *Economics of Sovereign Wealth Funds: Issues for Policymakers*, (Washington: International Monetary Fund).
- Dixon, Adam D., Ashby H.B. Monk, 2010, "Rethinking the Sovereign in Sovereign Wealth Funds," available at SSRN: <http://ssrn.com/abstract=1652701>.
- Fama, Eugene F., and Michael C. Jensen, 1983, "Separation of Ownership and Control," *Journal of Law and Economics*, Vol. 26, June 1983; also in *Foundations of Organizational Strategy*, Harvard University Press, 1998. Available at SSRN: <http://ssrn.com/abstract=94034>.

- Fleischer, Victor, 2008, "A Theory of Taxing Sovereign Wealth," *New York University Law Review*, Vol. 84, 2009; University of Illinois Law & Economics Research Paper No. LE08-030. Available at SSRN: <http://ssrn.com/abstract=1234410>.
- Frankel, Jeffrey A., 2011, "A Solution to Fiscal Procyclicality: The Structural Budget Institutions Pioneered by Chile." *NBER Working Paper* No. 16945.
- International Monetary Fund, 2008, "Operations of the Oil Stabilization Fund," Chapter III in *Islamic Republic of Iran: Selected Issues, IMF Country Report No. 08/285*, available at: <http://www.imf.org/external/pubs/cat/longres.aspx?sk=22282.0>.
- International Monetary Fund, 2012, "*Macroeconomic Policy Frameworks for Resource-Rich Developing Countries*," (Washington: International Monetary Fund).
- International Working Group (IWG) of Sovereign Wealth Funds, 2008, "Sovereign Wealth Funds: Generally Accepted Principles and Practices: "Santiago Principles,"" (October), available at: <http://www.iwg-swf.org/pub.htm>.
- Knoll, Michael S., 2009, "Taxation and the Competitiveness of Sovereign Wealth Funds: Do Taxes Encourage Sovereign Wealth Funds to Invest in the United States?" *Southern California Law Review*, Vol. 82, p. 703;
- Monk, Ashby H. B., 2008, "Recasting the Sovereign Wealth Fund Debate: Trust, Legitimacy, and Governance," Available at SSRN: <http://ssrn.com/abstract=1134862>
- Monk, Ashby H. B. and, Jagdeep Singh Bachher, 2012, "Attracting Talent to the Frontiers of Finance," available at SSRN: <http://ssrn.com/abstract=2120167>.