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Public Finance Review

Turkey in Transition: Time for a Fiscal Policy Pivot?

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CURRENCY EQUIVALENTS
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Currency Unit	Turkish Lira
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Weights and Measures: Metric System

ABBREVIATIONS AND ACRONYMS

<p>AAA Analytic and Advisory Activities AK Justice and Development Party CAD Current Account Deficit CBRT Central Bank of the Republic of Turkey CC Commercial Code CEDPL Development Policy Loan CPS Country Partnership Strategy</p> <p>DA Development Agency</p> <p>DPO Development Policy Operation EBRD European Bank for Reconstruction and Development EC European Commission ESW Economic Sector Work EU European Union EUR Euro</p> <p>FDI Foreign Direct Investment</p> <p>GDP Gross Domestic Product GMI Guaranteed Minimum Income ICR Implementation Completion Report IDA International Development Association</p> <p>IFRS International Financial Reporting Standard IMF International Monetary Fund ISKUR Turkish Employment Agency IT Information Technology</p>	<p>M&E Monitoring and Evaluation MoF Ministry of Finance MoH Ministry of Health MIP Medical Insurance Plan MTEF Medium Term Expenditure Framework MTP Medium Term Program NUTS Nomenclature of Units for Territorial Statistics OECD Organization for Economic Cooperation and Development PDO Program Development Objectives PER Public Expenditure Review</p> <p>PFM Public Financial Management PFMC Public Financial Management and Control PL Policy Loan PPDPL Programmatic Public Sector Development Policy Loan PPP Public Private Partnership REGE-DPL Restoring Equitable Growth and Employment Programmatic Development Policy Loan SBA Stand-by Arrangement (of the IMF) SME Small and Medium Enterprises SPA Special Provincial Administration SPO State Planning Organization (now Ministry of Development)</p> <p>TCA Turkish Court of Accounts TL Turkish Lira UHI Universal Health Insurance USD United States Dollar VAT Value Added Tax</p>
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Executive Summary

1. **Turkey has experienced rapid growth and improved social outcomes over the past decade.** Per-capita income in USD terms tripled during the first decade of the 21st century, and Turkey is now the world's 17th largest economy. Social outcomes have also improved considerably as a result of economic growth, increased government spending and improved public service delivery. Infant mortality has plunged, while life expectancy at birth has risen from 65 to 75 years. Increases in access to education (and virtually universal enrollment at the primary level) and health services (linked to the Health Transformation Program) are equally impressive. Fiscal policy was an important component of the reform program that delivered these successes. Prudent fiscal policy also provided the fiscal space to soften the blow of the global economic and financial crisis in 2008-2009. This report documents the central role played by fiscal policy over the last decade and presents simulation results from a computable general equilibrium model that will help inform the future direction of fiscal policy to support sustained high growth.

2. **Prudent fiscal policy was supported by structural changes in the economy.** In the immediate aftermath of the 2001 banking crisis, expenditure restraint - especially of capital expenditures - helped contain fiscal deficits. In subsequent years, strong revenue growth explains the achievement of sustained primary surpluses of almost 5 percent of GDP a year until around 2007. Revenue growth was supported by a compositional change in revenues from direct to indirect -- or consumption-based -- taxation. With declining informal employment as agricultural labor shedding gathered pace, increases in social contributions also boosted general government revenue growth. Rising government revenues and the dramatic reduction in interest payments made room to increase government social expenditures -- by about 5 percentage points of GDP. Health and pension expenditures dominate the rise in government spending and help explain better the social outcomes observed over the period.

3. **Strong fiscal outcomes attracted rising capital inflows which in turn boosted growth and revenues.** The government built a track record of macroeconomic stability anchored in prudent fiscal policy and high and sustained primary fiscal surpluses. One of the direct consequences of this fiscal stance was the decline in public debt by half between 2001 and 2012 to less than 40 percent of GDP. Improved confidence reduced the sovereign risk premium and led to a decline in real interest rates. This and a global economy awash in liquidity during the 'Great Moderation' meant that Turkey attracted growth promoting capital inflows. A virtuous circle of robust economic growth generating strong government revenues that supported the continued achievement of primary fiscal surpluses ensued. However, the access to cheap global liquidity also precipitated a trend decline in domestic savings and a corresponding increase in external imbalances. Rebalancing the economy and reducing the dependence of growth on foreign financing has been a priority for policy makers in Turkey, and this report seeks ways for fiscal policy to support this effort.

Trade-offs and Policy Options

4. **The dynamics of fiscal outcomes and private investment and savings raise a series of trade-offs for policy going forward.** The first trade-off concerns the allocation of remaining fiscal space between current and investment spending. Sharing the fruits of fiscal success has supported Turkey's inclusive growth efforts and has helped muster support for continued fiscal consolidation. It has however also introduced rigidities into the composition of government expenditures as the windfall from falling interest payments has been mostly allocated towards increased current spending. Going forward, Turkey may have to shift spending towards public investment and restrain the growth in current spending to establish a growth model less dependent on debt-financed consumption. The analysis in this report suggests that public investment could *crowd-in* private investment and promote a more sustainable

growth path. However, this benefit will only be realized if public investment is well prioritized, executed efficiently and in a regulatory framework that allocates risks appropriately between the state and the private sector.

5. **Government revenue dynamics present another set of trade-offs.** The change in the composition of tax revenues toward consumption-based taxation over the last decade has been dramatic, with indirect taxes now making up over 50 percent of total central government tax receipts and almost 14 percent of GDP. The increase in consumption taxes can be explained by both increases in the tax rates on consumption goods (e.g. the special consumption tax) and the strength of domestic demand over the last decade. The counterpart of domestic demand-led growth was declining private saving rates. The macroeconomic stabilization effort reduced pre-cautionary reasons to save and the decline in real interest rates supported borrowing for consumption. A key policy objective of the government is to increase the national savings rate. However, given the structure of taxation an increase in private savings would negatively affect public savings because it implies a decline in consumption based tax revenues. Under various scenarios we model, the fiscal deficit is projected to increase to 4.5 percent of GDP or more in the medium-term if the financing of growth shifts decisively to domestic savings.

6. **A shift to higher *effective* taxation of capital is a possible way out.** Labor in the formal sector is highly taxed through both payroll and indirect consumption based taxes. Capital on the other hand is taxed at much lower effective rates. A relatively small increase in the effective capital income tax rate from 3.3 percent to 5 percent – which is better thought of as an improvement in enforcement of corporate income tax collection – can offset the decline in indirect tax revenue coming from higher private saving rates. In such a scenario, thus, Turkey could grow faster with higher domestic saving and continued fiscal prudence. We also find that one element of more *effective* capital taxation, namely increased property tax revenues, would promote a better allocation of investment to more productive sectors and away from housing. This too supports the government’s ambition for a less volatile economic growth path.

7. **These fiscal trade-offs are likely to be exacerbated as the structural transformation of Turkey’s economy slows down.** There has been a dramatic shift in employment out of agriculture and into manufacturing and services over the last two decades, parallel to the rapid pace of urbanization in Turkey. This dynamic has been a boon for government revenues as workers came into the formal sector and started paying social contributions. This transformation will continue for some time, but probably at a less dramatic pace. Indeed, the degree of informal employment in Turkey today is about where one would expect it to be given its level of development. The implication for fiscal policy is that alternative sources of revenues will have to be found, such as broadening of the tax base and taking structural measures to boost employment creation, perhaps combined with expenditure cuts, to offset the diminishing incremental revenues from structural change. Specifically, in this Report we focus on the importance of increasing the female labor force participation rate to continue to support general government revenues as more women come into the formal labor market.

8. **Structural reform beyond fiscal policy will be needed to support increases in the female participation rate.** At 31 percent, the female labor force participation rate in Turkey is the lowest in the OECD and low relative to other fast growing emerging markets. We find that targeted reductions in social security contributions and reductions in the minimum wage improve female formality rates, but are somewhat limited in boosting overall employment rates. Indeed, a simulation of the 2008 reforms to social contribution rates explains a relatively small portion of the actual increase in female employment in 2010. However, a faster increase in female labor force participation – for instance as a result of labor market reforms - could significantly boost medium-term economic growth. Moreover, since this is equivalent to an increase in the economy’s supply potential, it generates growth without additional external imbalances, while rising female incomes also contribute directly to rising domestic savings.

Structural reforms to boost female employment would thus help fiscal revenues as much as economic rebalancing.

9. **Time for a fiscal policy pivot.** The fiscal policy that defined the last decade was successful in many ways, but given the changes in the economy a fiscal policy pivot may be in order. Health expenditure growth cannot continue at past rates and the fiscal benefits of a decline in real interest rates will not continue at magnitudes observed in the last decade. On the revenue side, social contributions are unlikely to continue growing as they have over the last decade. This presents a series of fiscal policy trade-offs for the government as it seeks to reduce the risks inherent in a foreign financed economic growth model. We present a series of recommendations to effectively navigate these trade-offs and to have fiscal policy support the government's objective of a more domestically financed growth model. Our results indicate that a modest increase in *effective* capital income taxation, a property tax increase, lower social contribution rates and higher public savings mutually reinforce each other in supporting this objective. A change in expenditure composition away from current spending and toward high and good quality public investment will have a similar effect. Structural reforms could support the fiscal policy pivot, particularly by strengthening the supply side of the economy, for instance through an increase in female labor force participation.

10. **There are limits to what fiscal policy can do to support higher sustained growth without corresponding policy changes in other areas.** Improvements in the business environment are needed to boost Turkey's competitiveness, attract more Foreign Direct Investment and facilitate export-led growth (World Bank, 2014). This will also allow Turkey to absorb and benefit from the stream of youth and women entering the labor market, in turn enhancing Turkey's production capacity. A deepening of Turkey's financial markets could help raise domestic savings by offering a broader range of products to Turkish households. Turkey's regulatory reforms over the past decade have helped leverage private financing to improve the country's infrastructure performance. But improvements in the public finance management system are needed to address concerns over the competitiveness of tendering procedures and the value for money of public resources committed. Improvements in access to public services could be combined with decentralization of decision making to boost service quality and spending efficiency. All of these steps together represent a challenging reform agenda as Turkey heads towards high income. As this report went to press, developments in emerging markets around the world have served to highlight the importance of renewed structural reform efforts. A fiscal policy pivot in Turkey could be part of and support a reform-based, sustained growth scenario.

Chapter 1. Fiscal Dynamics in a Time of Growth

A. INTRODUCTION

1.1. **Turkey's rapid growth and development over the past decade is one of the success stories of the global economy.** After a banking crisis in 2001, the country embarked on a macroeconomic reform program anchored by strong fiscal consolidation, strengthened banking supervision, a reform of the social security system, and the shift to a flexible exchange rate regime with an independent Central Bank responsible for inflation targeting. Institutional improvements in public finance management are also noteworthy (e.g. Law no 5018 and 4749 and the Medium Term Fiscal Plan). Per-capita income in USD terms subsequently almost tripled between 2002 and 2008, and Turkey is now the world's 17th largest economy. Social outcomes have also improved considerably as a result of economic growth, increased spending and improved quality of public service delivery. Increases in access to education (and virtually universal enrollment at the primary level) and health services (linked to the Health Transformation Program) are impressive.

1.2. **Turkey's fiscal policy over this period stands out when juxtaposed against the current fiscal austerity and economic growth debates on both sides of the Atlantic.** For much of the decade following the 2001-banking crisis the authorities were able to run general government primary fiscal surpluses of about 5 percent of GDP, achieve average real GDP growth of 5 percent, all while increasing social expenditures by over 5 percentage points of GDP. The public debt to GDP ratio was just 36 percent in 2012. Turkey's experience is thus a case study of the benefits of sound fiscal management for boosting shared prosperity. The objective of this chapter is to review this period of fiscal consolidation and draw implications for future fiscal policy. The main message is that the dynamics driving the fiscal stabilization of the last decade are changing. The mutually reinforcing cycle of high economic growth and high government revenue growth of the last decade is running out of steam. Likewise, international capital is likely to be more expensive in the medium term than over the past decade, with implications for yields and consequently for debt dynamics. Fiscal space for growth promoting spending will need to come from other areas than declining interest payments and strongly rising government revenues going forward. And an emphasis on the "micro" roles of government – better regulation, improved business climate – will be more important in the years ahead.

1.3. **The chapter suggests that fiscal policy must now be re-oriented in ways that incentivize formal employment, increase private saving rates and hence support sustainable as well as rapid long term growth.** These connections are spelled out here and subsequent chapters aim to quantify the links with a computable general equilibrium model. In looking back on the past decade the analysis in this chapter indicates that structural changes in tax and expenditure compositions are called for. The key findings are:

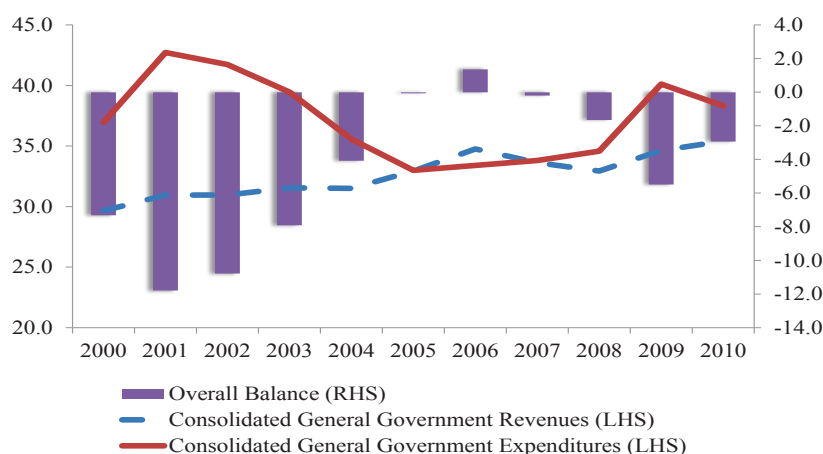
- a. **The achievement of high and sustained primary fiscal surpluses was driven primarily by rising social contributions.** While initially driven by public investment expenditure restraint, rising general government revenues explain the achievement of past primary fiscal surpluses. The increase in general government revenues was driven by social contributions as a result of declining informal employment as agricultural labor shedding gathered pace.
- b. **The decline in informal employment was facilitated by foreign financed economic growth,** which itself was driven in part by the strong fiscal program. The benign global environment in the run-up to 2009 global crisis meant that Turkey was a key recipient of growth promoting global capital flows. National savings, on the other hand, saw a continuous decline over the same period.

- c. **The domestic reform program and the global environment also contributed to the dramatic reduction in interest payments.** This decline and the increase in government revenues allowed for a dramatic increase in social expenditures. Sharing the fruits of fiscal success is commendable from a social development perspective and surely helped in garnering support for continued fiscal consolidation, but it did introduce rigidities into the composition of government expenditures.
- d. **More rigid government expenditures and increasingly more cyclical government revenues limit fiscal space going forward.** This combination and the limits of relying on privatization revenues underscores the continued need for fiscal prudence so that the hard won confidence gains of the last decade are not lost. It also calls for a re-orientation of both expenditure and revenue policy to better support more domestically financed economic growth going forward.

B. FISCAL DYNAMICS 1999-2012: A BRIEF EXPLANATION

1.4. **Strong revenue performance was at the heart of solid public finances during the past decade.** General government revenues grew from about 27 percent of GDP in 2000 to almost 33 percent of GDP in 2012. Revenues benefitted from the strengthening connection between economic growth and revenue growth over the period. Domestic demand led growth supported growing revenues from consumption taxes, while rising social contributions were made possible as formal employment growth accelerated (see below). Expenditures fell sharply in the immediate aftermath of the 2001 banking sector crisis, but started to rise in 2005 and then sharply so during the recent global financial crisis, reaching about 35 percent of GDP. A strong compositional change of expenditures away from interest payments and towards social spending is the key feature of expenditures over this period (see below). The result of these revenue and expenditure dynamics was a decline in the overall fiscal deficit from 12.5 percent of GDP in 2001 to 2.5 percent in 2008, the year before the full effects of the global financial crisis were felt. During the crisis, the deficit increased to 5.4 percent, but it has since declined to less than 2.0 percent in 2012.

Figure 1.1. Fiscal Outcomes 2000-2012



Source: Ministry of Development.

1.5. **Decomposing the changes in the primary fiscal deficit underscores the importance of revenue growth on fiscal outcomes.** During the 2000-2007 period, the primary fiscal surplus increased to around 5 percent of GDP, and although it declined to a deficit of -0.3 in 2009, by 2011 the primary

surplus was restored and stood at 1.7 percent of GDP in 2012. Table 1 shows the key components of the fiscal accounts as a percent of GDP. Improved fiscal outcomes over 2003-12 are compared to a reference period that includes the crisis of 2001. We also isolate the years 2009-10 as they represent a year of crisis impacts and the subsequent rebound, while 2011-12 represents the early years of a potential normalization after the crisis. Relative to the reference period, the post-2001 crisis and pre-2009 crisis period saw a significant increase of the primary surplus of about 1.5 percentage points on average, putting the actual average surplus in the 5 to 6 percent range. Increased revenues explain the bulk of the increase in the primary surplus during this time. A small reduction in capital spending also supported the increase in the primary balance.

Table 1.1. Turkey: Fiscal Adjustment 1999-2012
(annual averages for each sub-period)

Percent of GDP	Reference Period	2003-08	2009-10	2011-12
	(1999-2002)	Relative to Reference Period		
1. Capital expenditure	3.5	-0.5	-0.1	0.0
2. Non-interest current exp.	21.7	2.3	9.1	5.8
3. Revenues	28.8	3.3	5.8	5.1
4. Primary balance (3-2-1)	3.7	1.5	-3.1	-0.8
5. Interest payments	14.1	-6.0	-9.0	-10.7
6. Fiscal deficit (5-4)	10.4	-7.5	-5.8	-9.9
Real GDP Growth percent/year	1.0	4.9	1.2	4.4

Source: World Bank staff calculations based on Ministry of Development data.

Note: Rounding error present.

1.6. **The decline in interest payments created the space for non-interest current expenditure increases.** Interest payments declined by 6 percentage points on average during the 2003-2008 period and the decline accelerated to 10.7 percent if the final 2011-12 period is compared with 1999-2002. The dramatic decline in the overall fiscal deficit is more than fully explained by the decline in interest payments. At the same time, the resulting fiscal space was used to boost current spending, first moderately and then significantly during the crisis years. By 2011-12, current spending was some 5.8 percent above the 1999-2002 average. Capital expenditures declined slightly relative to the benchmark period until around 2010 and have recently seen a moderate comeback.

1.7. **While the fiscal dynamics presented are impressive they also contain the seeds of a possibly less favorable outlook.** There are a few headline take-aways from the fiscal dynamics presented here. The first is that revenue growth is the main explanatory factor for the increase in the primary surpluses over the periods identified, as non-interest current expenditures increased significantly. The second is the dramatic fall in interest payments that largely explains the improvement in the overall fiscal balance. The third is the overall stability of capital expenditures. The implications of these fiscal dynamics are taken up in the subsequent sections and chapters. Suffice to note three implications here. First, increases in non-interest current expenditures have embedded rigidities into the fiscal accounts while reliance on revenue growth to support fiscal prudence will be challenging in a lower growth environment. Consequently, sustaining prudent headline fiscal outcomes will be more difficult. Second, the fiscal space generated by the decline in interest payment has largely run its course. Third, sustained primary surpluses have led to a dramatic decline in public debt, providing a strong buffer in the context of a more challenging environment. We turn to the third implication next.

C. PUBLIC DEBT DYNAMICS 1999-2012: ANOTHER BRIEF EXPLANATION

1.8. **Primary surpluses and real GDP growth have driven the decline in public debt.** Non-financial public debt was a non-threatening 50 percent of GDP in the years in the run up to the 2001 crisis, but banking sector contingent liabilities became explicit government liabilities during the crisis and the public debt-to-GDP ratio jumped to an average of 84.4 percent of GDP over the 2001-02 period (Table 1.2). The sharp depreciation of the lira was also a key factor in the increase (Table 1.2, 1st column). Since then public debt has come down to an average of 32 percent of GDP in 2011-12. Table 1.2 presents the relative contributions for each factor that has contributed to the annual movements in the public debt-to-GDP ratio over the 2001-2012 period. The largest relative contribution to the reduction in the debt ratio has come from persistent primary surpluses, followed by real GDP growth. Real interest rates prevented an otherwise lower reduction in the debt ratio.

Table 1.2. Factors Explaining Public Debt to GDP Path^{a/b/}

	2001-02	2003-08	2009-10	2011-12
Non-Financial Public Sector (NFPS)				
Net debt/GDP	84.4	49.7	38.1	32.1
Change in Government Debt/GDP	10.7	-5.8	1.0	-3.0
Underlying factors:				
Primary balance	-4.8	-4.8	0.1	-1.7
Real GDP growth	-0.4	-3.0	-0.7	-1.5
Real interest rate	-3.9	2.6	2.1	-0.2
Real exchange rate	17.0	-0.9	0.1	0.7
Other factors	2.8	0.3	-0.7	-0.3

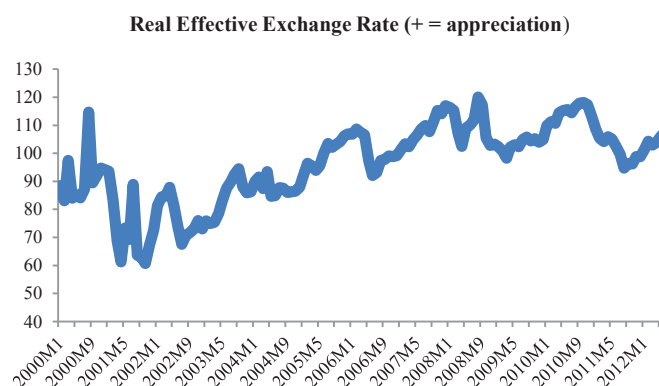
Source: Authors' calculations and IMF Article IV, various issues and IFS.

^{a/} The numbers in the table are the average annual impact of each factor for each sub-period of time in percentage points of GDP.

^{b/} Rounding error present.

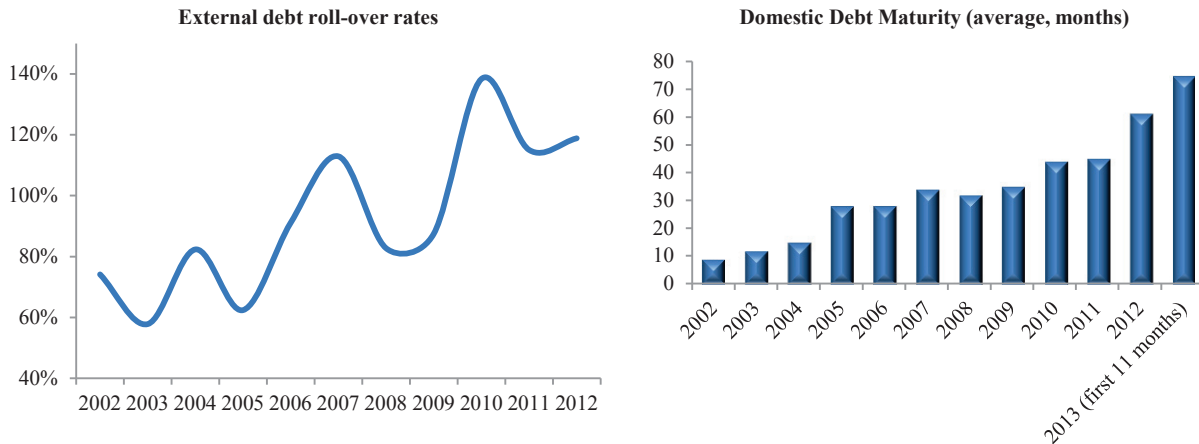
1.9. **Active debt management more than the appreciating real exchange rate helped reduce the public external debt burden.** The appreciating real exchange rate (Figure 1.2) contributed just 1 percent to the decline in the public debt ratio per year over the 2003-2008 period. The reason is that the external component of total public debt was reduced from about 35 percent of total public debt to about 11 percent today. The change in composition was the result of active debt management practices that included paying down external amortizations and switching to domestic debt financing (Figure 1.3). Additionally, the lengthening of domestic debt maturities was a key outcome of debt management during this period. Important institutional improvements underpinned these positive outcomes. The introduction of the Public Finance and Debt Management Law in 2002 was an important step. It helped strengthen the role of Treasury as portfolio manager in creating a middle office in charge of debt and risk management and a high-level debt management committee.

Figure 1.2. Turkey: Real Exchange Rate Appreciation



Source: Authors' calculations and IMF Article IV, various issues and IFS.

Figure 1.3. Turkey: Prudent Public Debt Management



Source: Undersecretariat of Treasury.

Source: Undersecretariat of Treasury.

1.10. **Continued positive public debt dynamics will require continued fiscal prudence, particularly if growth moderates.** Primary surpluses thanks to revenue growth, and a rising denominator thanks to GDP growth explain the bulk of Turkey’s positive debt dynamics over the past decade. However, the outlook at least in the short to medium term is for growth to moderate considerably from the rates seen in the 2000s. This may impact revenue performance and hence would require greater fiscal effort to maintain positive debt dynamics. At the same time, the low debt to GDP ratio achieved does represent a fiscal buffer in the face of a less favorable environment for emerging markets going forward. The experience of the 2001 crisis recalls the importance of maintaining a strong buffer in case of unexpected shocks and thus points to the need for continued fiscal prudence even in a lower growth environment.

D. FISCAL DYNAMICS 1999-2012: A CLOSER LOOK

Government Revenues: Rising Indirect Taxes and Social Contributions

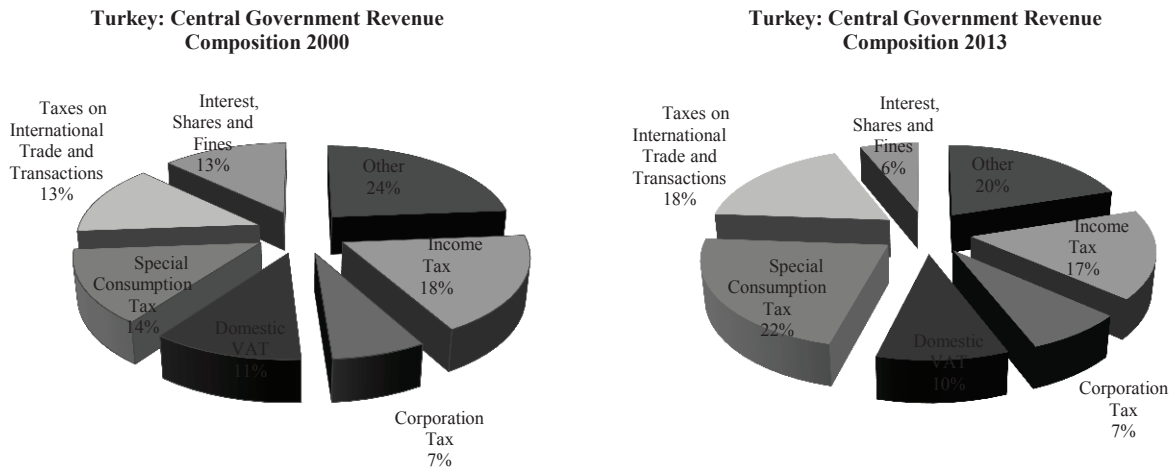
1.11. **The tax take as a share of GDP has remained stable but there has been a dramatic shift in the composition of tax revenues.** Given the importance of revenue growth for fiscal outcomes over the past decade, a closer look at government revenue dynamics is warranted. Central government revenues in Turkey have averaged about 23 percent of GDP since 2000, with the variation largely being contained to 1 percentage point of GDP over the period. The level of central government revenues is broadly in line with other fast growing emerging markets, although it is low relative to OECD members. What is noteworthy is the change in the composition of tax revenues over this period. Revenues from the special consumption tax and taxes on international trade have grown significantly.¹ Revenues from these two taxes increased by 13 percentage points of total central government revenues and now make-up about 40 percent of the total.

1.12. **The increase in consumption taxes can be explained by both increases in the tax rates on consumption goods and the rapid growth in consumption over the past decade.** As a result, indirect taxes now make up over 50 percent of the total central government tax take and almost 14 percent of GDP

¹ The taxes on international trade are mainly the VAT on imported goods and do not differ from the VAT on domestic goods.

(Figure 1.4). This leaves government revenues highly vulnerable to domestic demand slowdowns. The correlation between real GDP growth and real central government revenues growth is quite strong over the last decade, with revenue buoyancy as high as 2.5 in 2009 during the year when the full effects of the global crisis were felt (Figure 1.5). Moreover, the Government’s medium-term development strategy makes explicit reference to the desire to move more strongly toward an export-led growth strategy. A rebalancing toward net exports as the key driver of growth would mean less tax revenues than experienced in the last decade, if tax policy remains the same. Additionally, with tax rates on some of the items that make up the special consumption tax already high the scope for additional consumption tax increases may be limited without risking base erosion.

Figure 1.4. Turkey: Changes in Central Government Revenues

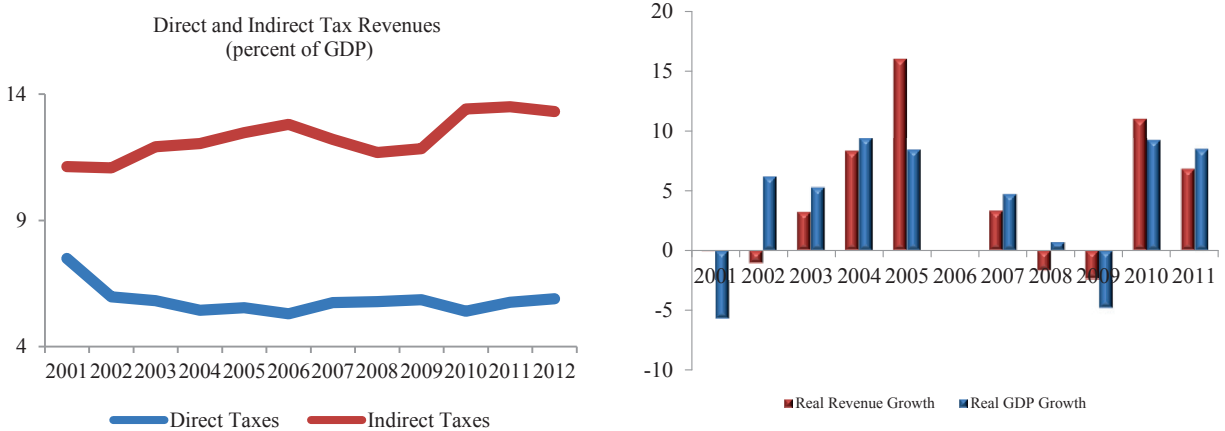


Source: Ministry of Finance.

1.13. **Overall government revenues increased significantly, thanks mainly to rising payroll taxes.** The main difference in the two sets of revenue figures is the additional revenues stemming from social security contributions and dividends from state owned enterprises. The difference is significant with both adding almost 12 percentage points of GDP to the central government tax and non-tax revenues (Figure 1.6). Increasing social security contributions account for the bulk of the increase in government revenues over the period of analysis. Social Fund contributions almost doubled over the period from 4.4 percent of GDP to 8.1 percent, while dividends and profits from state owned enterprises saw an increase of almost 2 percentage points of GDP from 3.5 percent (Figure 1.6).²

² In this section and the remainder of the document privatization revenues are considered below the line and are not accounted in the fiscal balances. However, in Turkey the law allows for excess privatization revenues to be spent freely and hence they are financing sources for additional spending.

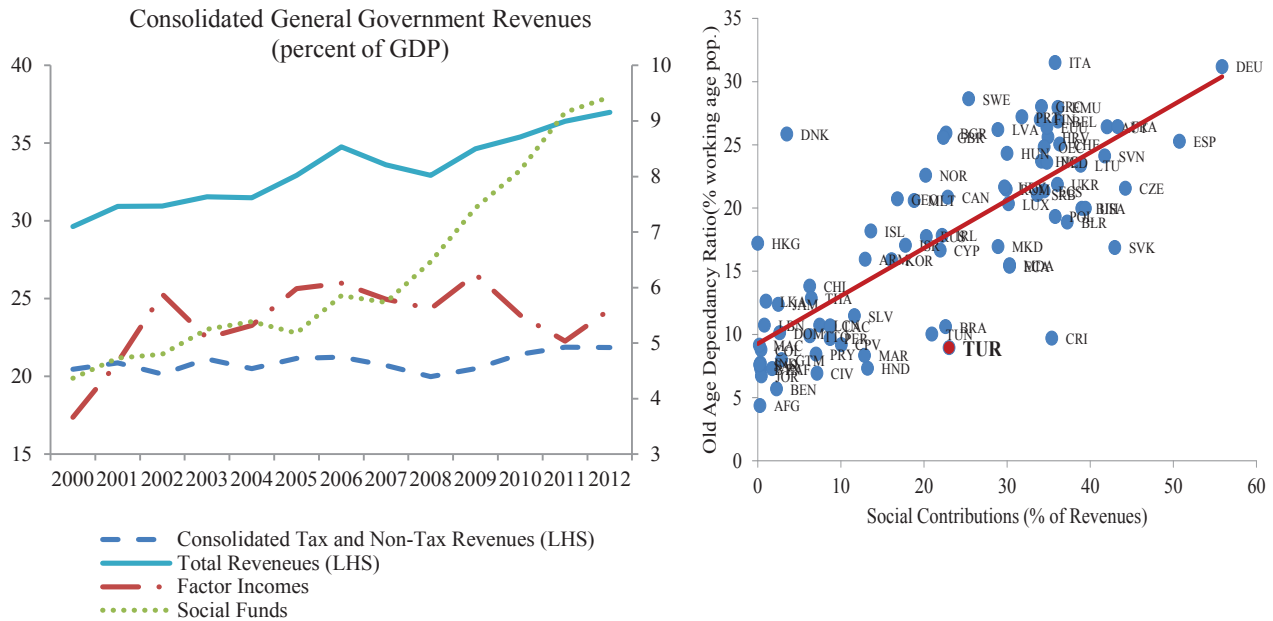
Figure 1.5. Turkey: The Rise of Indirect Taxes



Source: Ministry of Finance.

1.14. **The three main components of the Social Fund contributions are the pension fund, the unemployment insurance fund, and the general health insurance fund.** Social Fund contributions are primarily driven by pension fund contributions, with unemployment contributions and particularly health insurance contributions growing in importance in recent years. Health insurance contributions are now at 2.5 percent of GDP from zero in 2007 while unemployment contributions have grown to 0.5 percent of GDP from close to zero in 2000. Pension contributions were at 4 percent of GDP in 2000 and have since increased to 5.3 percent of GDP. At first glance, these shares are not particularly high by international standards. However, accounting for the demographic profile of the country Turkey becomes an outlier with relatively high social contributions given its young population (Figure 1.6). Consequently, the contribution rates needed for this level of revenues are high by international standards. The contributions are in the form of payroll taxes with employer’s contributions at about 19.5 percent of gross monthly income and employees’ contributions at about 14 percent. These tax rates in addition to personal income tax rates that range from 15 to 35 percent imply a high labor tax wedge (see Chapter 4).

Figure 1.6. Turkey: Social Contributions



Source: Ministry of Development, OECD and Bank staff calculations.

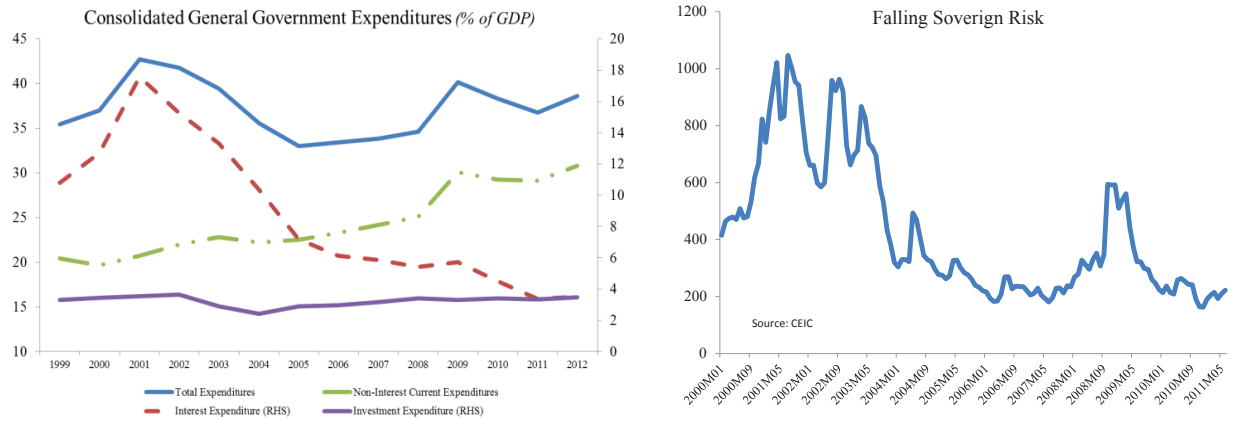
1.15. **The two major trends in government revenues over the last decade are the change in the composition of central government revenues toward indirect taxation and the increase in the level of social contributions.** These trends may have run their course given the underlying dynamics of the economy. Indirect taxation is a convenient way to tax informal workers that are not captured by either payroll or incomes taxes. Moreover, raising special consumption taxes are a relatively easy way to get quick revenues when trying to meet primary surplus targets. Similarly, hiking special consumption taxes is a way to curb imports and support better current account balance outcomes. But, the informal sector is shrinking and the room to raise rates further is limited (see next chapter). Indeed, it was the movement of labor into the formal sector that supported the rise in payroll tax revenues. General government revenues therefore benefitted from declining informal employment as agricultural labor shedding gathered pace. The direct consequence of these trends is to make general government revenues more sensitive to cyclical changes in domestic demand. Another implication is that tax policy has shied away from the more difficult tax base of incomes taxes on both corporates and households. It is these two areas where tax policy must shift going forward as the pace of formal labor force employment growth slows. .

Government Expenditures: Interest Payments Down, Social Expenditures Up

1.16. The dramatic decline in interest payments was a consequence of both domestic and external factors. Interest payments declined by 10 percentage points of GDP, while non-interest current expenditures increased by almost 9 percentage points of GDP (Figure 1.7). These trends coincided with the flat trend in public investment. The combination of sound debt management practices and the running of primary fiscal surpluses helped bring down interest payments. Global economic conditions also helped. Sovereign bond spreads for Turkish external debt fell precipitously over the last decade as global liquidity conditions, including low developed country interest rates and falling global risk aversion, favored capital inflows into emerging markets. Recent research on capital inflow surges suggests (Zaldueño et al 2012) that global factors largely explain whether or not a surge in capital inflows will take place in a country, while domestic factors determine the size of the surge relative to other emerging market economies. Turkey’s policy efforts to contain the size of the surge with macro-prudential tools and unorthodox

monetary policy fall outside the scope of this report. But the implication of the analysis is that foreign capital inflows were an important driver of falling domestic yields and hence declining interest expenditures particularly after 2009.

Figure 1.7. Turkey: Falling Interest Payments and Global Risk Aversion



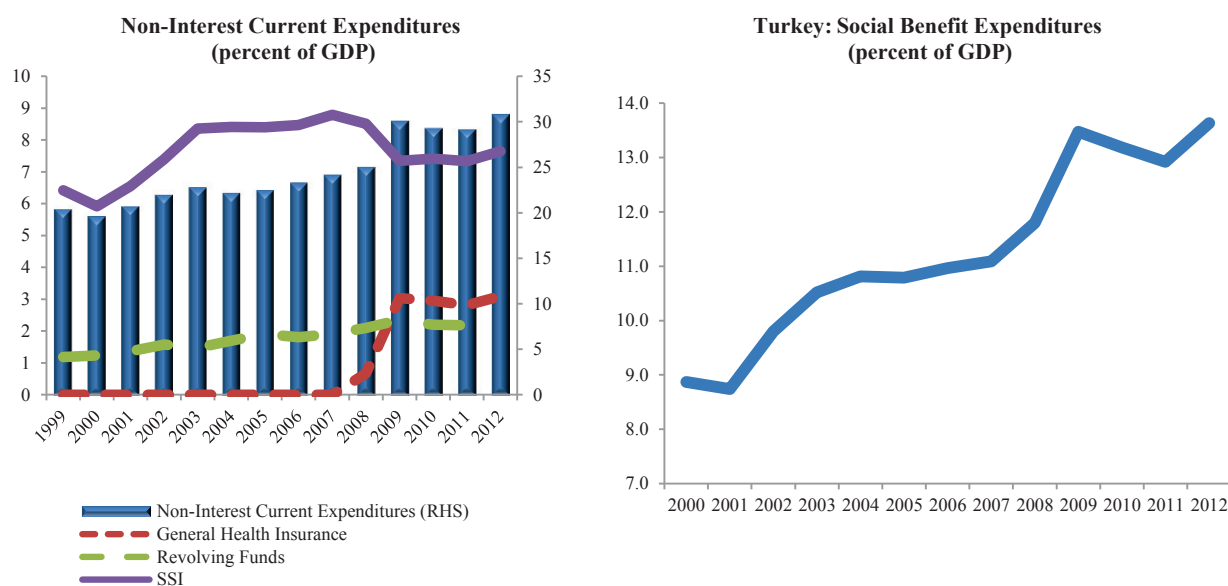
Source: Ministry of Development.

1.17. **The dramatic decline in interest expenditures was partly matched by an increase in non-interest current expenditures.** In the first half of the decade central government non-interest expenditures declined marginally to 17.6 percent of GDP. But already during this period transfers to social security agencies increased by almost 2 percentage points of GDP. This trend continued in the second half of the decade with current transfers explaining 2.2 percentage points of the 4.8 percentage point increase in central government non-interest expenditures between 2005 and 2010. Direct transfers to the Social Security Organization account for account for 1.3 percentage points of the overall increase of 2.2 percentage points in current transfers. An increase in compensation to public employees accounted for almost 1 percentage point of GDP of the increase in overall non-interest expenditures. A small increase in capital expenditures explains the bulk of the remainder.

1.18. **In the consolidated government accounts, it is the increase in health insurance expenditures that explains the bulk of the rise in non-interest current expenditures.** As in the case of central government spending, the increase took place during the second half of the decade. Health insurance outlays for instance increased by almost 3 percentage points of GDP between 2008 and 2010 (Figure 1.8), although this exaggerates the actual increase in health insurance spending because it was only separated in the accounts of the Social Security Institution (SSI) in 2008.³ The other 2 percentage points of GDP came in equal proportion from increased expenditures on social security and revolving funds expenditures. Note that revolving funds largely operate in the health sector (Ministry of Health institutions and Universities), so roughly 4 of the overall 5 percentage points increase comes from health related spending. Central government non-interest current expenditure components noted above – duty losses, treasury aid and shares from revenues – all picked up in 2009 and help explain the remainder of the 2009 jump in expenditures. These items are largely related to the authorities’ response to global financial crisis and amounted to about 1.5 percent of GDP.

³ Health Insurance expenditures started to be recorded uniquely in 2008 rather than being bundled with other SSI expenditures as was the earlier practice.

Figure 1.8. Turkey: The Rise in Social Expenditures



Source: Ministry of Development.

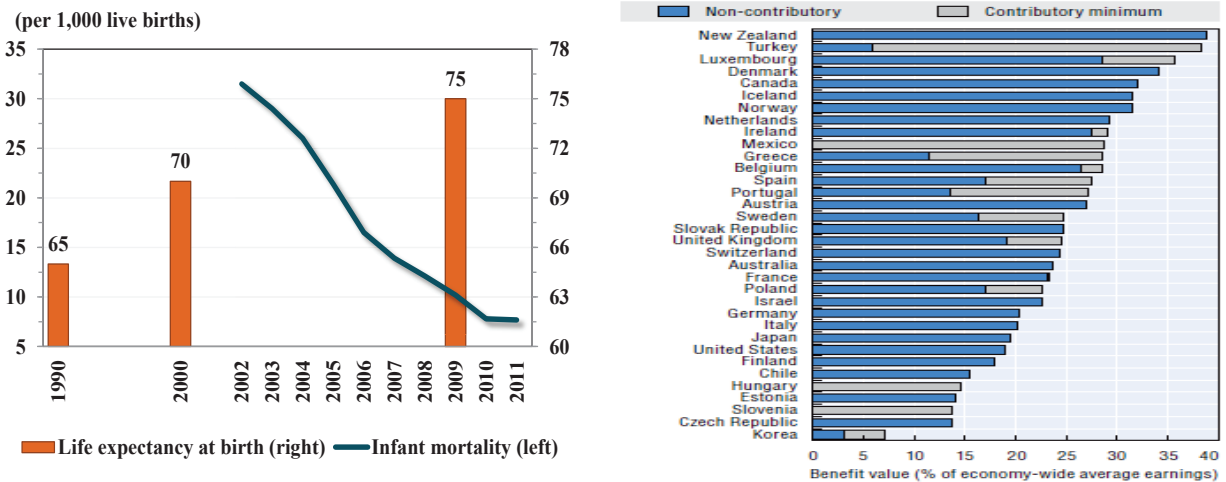
1.19. **While social benefits in Turkey are not large in international comparison, when Turkey’s young demographic structure is taken into account, social security spending looks generous.** At just over 13 percent of GDP, total social benefit expenditures do not show Turkey as an outlier in cross country comparisons. However, taking account of its favorable demographics, its social benefits expenditures are oversized for its level of development (ref. Figure 1.6). The spending dynamics chronicled above combined with the underlying demographics help explain why the major social security funds are in a perpetual deficit despite the large, young working-age population in the country. Moreover, starting from January 2012, the cost of health services provided to citizens covered by non-contributory health insurance (formerly known as the Green Card Program) has become part of SSI’s balance and financed through the overall government transfers to the SSI. Rising coverage and demand for health services are likely to add to spending pressures going forward.

1.20. **These spending choices have delivered universal health insurance of high quality, generous pensions for retirees and recently, small but growing unemployment insurance benefits.** While establishing causation is beyond the scope of this work, these expenditures have certainly contributed in some way to the dramatically improved social outcomes in Turkey over the last decade. Infant mortality has plunged from over 30 deaths per 1,000 live births to less than 10, while life expectancy at birth has risen from 65 to 75 years. Pension benefits are second only to New Zealand in the OECD, with the contributory minimum pension making up a particularly large share of overall benefits. In 2009, the minimum pension was set at a level which was more than the net minimum wage.

1.21. **The fiscal implications of rising social expenditures also warrant attention.** With an already high labor tax wedge it is not clear that there is much room to further increase social contribution rates. The SSI’s borrowing requirement (including general health insurance after 2008) was on average 2.7 percent of GDP between 2001 and 2010. Although, with the implementation of the 2008 social security and universal health insurance reform the SSI’s borrowing requirement eased to 2.4 percent of GDP as of 2010, deficits are projected to persist permanently into the future. Rising social entitlements may complicate fiscal adjustment in times of revenue slowdowns. This combined with the increasingly cyclical nature of revenues is a concern from a long-term fiscal sustainability perspective. Moreover,

persistent SSI deficits divert government resources away from infrastructure and other growth-supporting expenditures.

Figure 1.9. Turkey: Health Outcomes and Pension Benefits



Source: Author's calculations based on OECD data.

1.22. **Growing budget rigidities limits the ability to respond to future shocks.** While there are a number of ways to define budget rigidities, a rigid expenditure is a category of spending that is not discretionary or at least where discretion is limited. Public sector wage bill spending, transfers to social security institutions, goods and services related to health spending, transfers to local governments and subsidies to state-owned enterprises are typical expenditure categories considered to be rigid. Using this definition, recent work by the IMF indicates that the share of rigid expenditures in total government spending increased by 10 percentage points from 2005-2007 (average) to 2012.⁴ Rigid government expenditures now make up almost 60 percent of total expenditures. Without changes to the composition of expenditures away from rigid categories fiscal outcomes will increasingly be at risk, especially as revenues are strongly dependent on domestic demand. While a detailed expenditure decomposition is beyond the scope of this analysis the preceding section makes clear that the current rate of growth in health expenditures is unsustainable.

E. FISCAL DYNAMICS AND ECONOMIC GROWTH

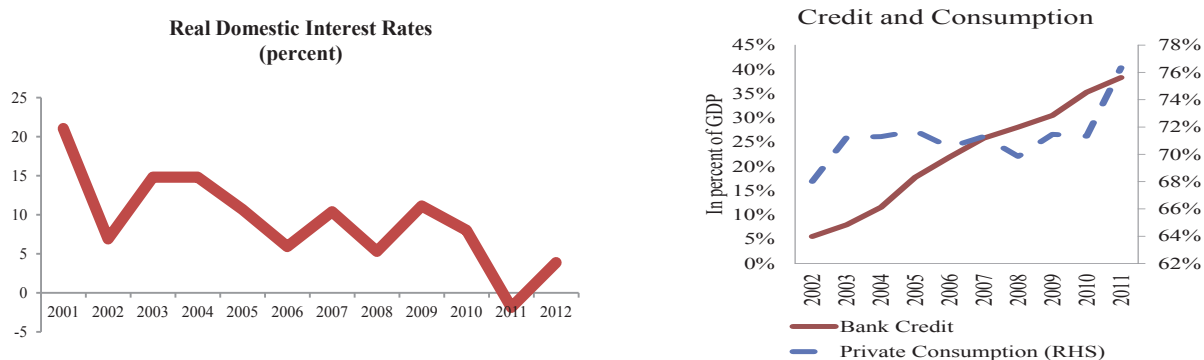
Fiscal Policy and National Savings

1.23. **Prudent fiscal policy created room for a considerable increase in private sector borrowing.** Domestic yields fell as the government no longer dominated domestic debt markets. The supply of government paper fell and so too did domestic yields. This and the broader set of economic reforms also acted to bring down risk premia, which contributed to the decline in real interest rates. At the same time, increasing macroeconomic stability appears to have reduced the appetite for precautionary savings. In combination, declining borrowing costs and greater consumer confidence unleashed pent-up consumption demand. Private consumption increased almost 10 percentage points of GDP over the decade of reform fuelled by bank credit that increased sharply from about 5 percent of GDP to nearly 40 percent of GDP by

⁴ IMF. Turkey – Selected Issues, SM/13/290, November 2013.

2011. Consequently, private domestic savings declined precipitously from over 22 percent of GDP in the late 1990s to 12.7 percent in 2011.

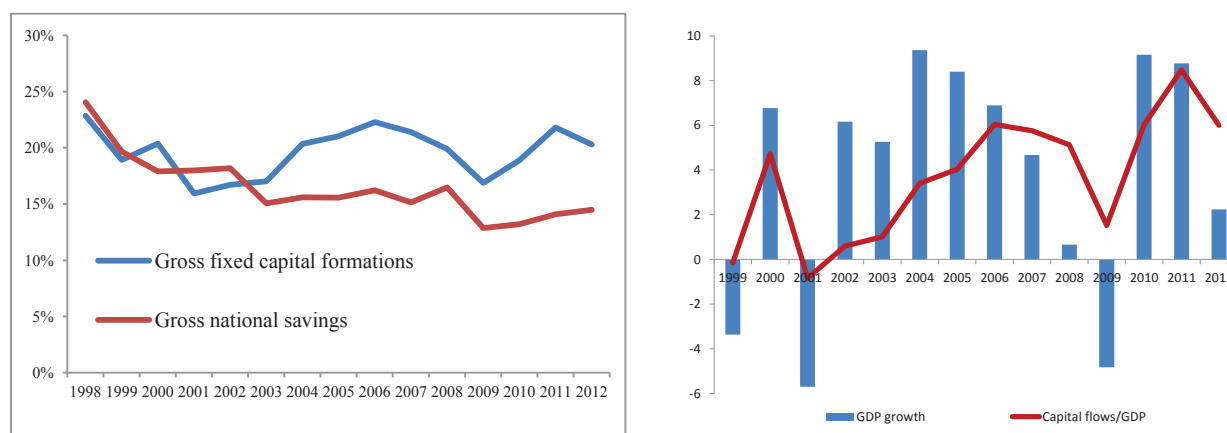
Figure 1.10. Turkey: Real Interest Rates and the Consumption Boom



Source: TurkStat and authors' calculations.

1.24. **A decline in household savings accounts for the bulk of the fall in the national savings rate, while a recovery in investment demand explains the resulting widening external imbalances.** There are numerous possible explanations for the fall in household savings, with macroeconomic factors and pent-up demand only two factors among many others (World Bank, 2012). At the same time, the decline in real interest rates engendered by the macroeconomic reform program and the benign global environment also served to lengthen business horizons and spur private investment (Figure 1.11). The result was a savings and investment gap that was reflected in high and sustained current account balances financed by capital inflows. While the bulk of the capital inflows were in the form of foreign direct investment in the mid-2000s, there has been a shift to short-term portfolio flows in the post-2009 crisis period. The heavy reliance of foreign inflows has given rise to significant volatility, with robust growth in periods of high inflows and slowing growth when capital flows out.

Figure 1.11. Saving-Investment Gap and Foreign Financed Growth
(in percent of GDP)

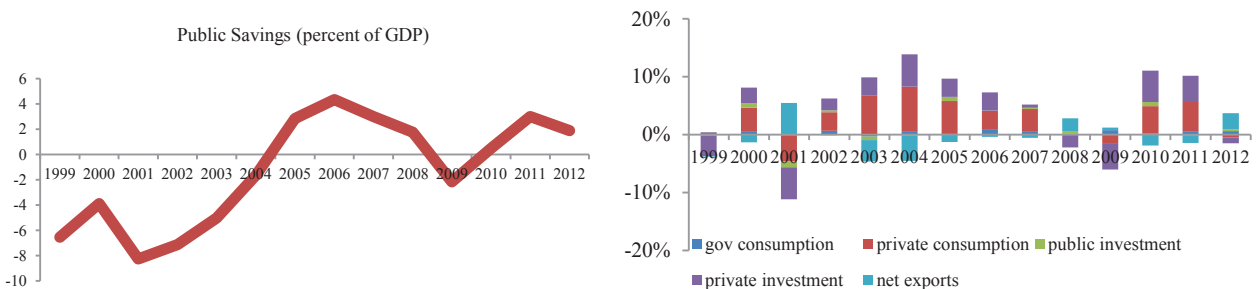


Source: TurkStat and staff calculations.

1.25. **International evidence suggests, more balance in the sources of financing is required if growth in Turkey is to be sustained.** Fast-growing developing countries have tended to rely substantially on their own savings in order to build up their domestic physical capital stock and spur

growth (Aizenman, Pinto and Radziwill 2004 2007) in spite of financial globalization. While the strength of the relationship may depend on the region of the world under consideration, cross-country empirical evidence does seem to suggest that the positive relationship between current account balances and economic growth appears to be driven by domestic savings led-investment rather than foreign financed investment (Prasad, Rajan and Subramanian 2007). More domestically financed growth can come through a number of channels, including the running of sustained primary surpluses as Turkey has done (Figure 1.12). To date, public savings have failed to raise national savings, as private savings have declined, although there is little evidence to suggest the second is a direct consequence of the first.⁵ It may be that as pent-up demand is exhausted and as real household incomes continue to rise, household savings will recover. Household habit formation may explain a lagged response of private savings to policy impulses (Carroll, Overland and Weil 2000). However, the challenge will be to prevent rising private savings from being offset by deteriorating public balances, given the dependence of revenues on consumption. This report provides a systematic analysis of these intricate links using a general equilibrium framework.

Figure 1.12. Turkey: Public Savings and Private Consumption Led Growth



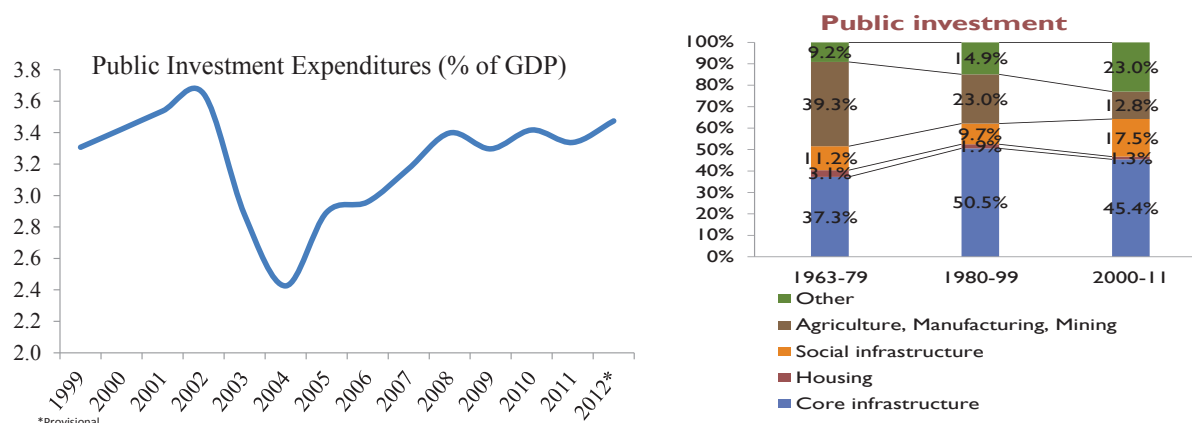
Source: TurkStat.

Fiscal Policy and Investment

1.26. **Public investment has played only a minor role in fiscal dynamics over the past decade.** Part of the post-2001 crisis response was a conscious effort to downsize public investment spending, particularly in 2003 and 2004. Public investment fell from about 3.6 percent of GDP in 2002 to 2.2 percent in 2004 (Figure 1.13). It has since increased to its pre-crisis level at about 3.5 percent of GDP in 2012. Turkey’s public investment program is largely concentrated in core infrastructure areas such as transport, energy and telecommunications. Social infrastructure has grown in terms of its share of the overall composition in the past decade, while the government has dramatically reduced its role in areas where government’s role is less clear, reflecting its privatization program over the last decade (Figure 1.13). The moderate economic growth outlook raises the question whether public investment could and should play a more active role in supporting growth. The next chapter considers just such scenario to understand better the potential growth implications.

⁵ See chapter 2, World Bank 2011 and IMF 2009 for a discussion of Ricardian Equivalence and the empirical evidence suggesting that it is not a key explanation for the decline in private savings in Turkey.

Figure 1.13. Turkey: Public Investment Trends

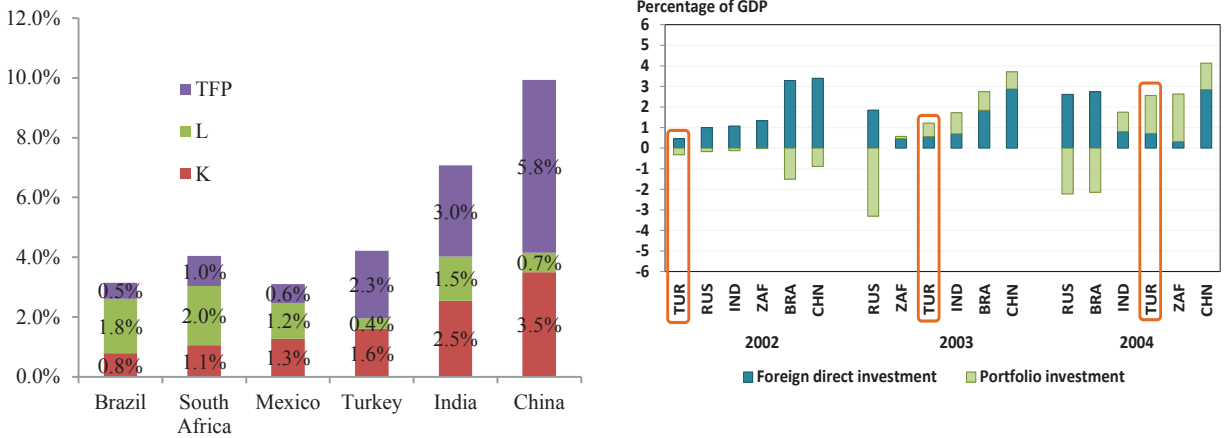


Source: Ministry of Development.

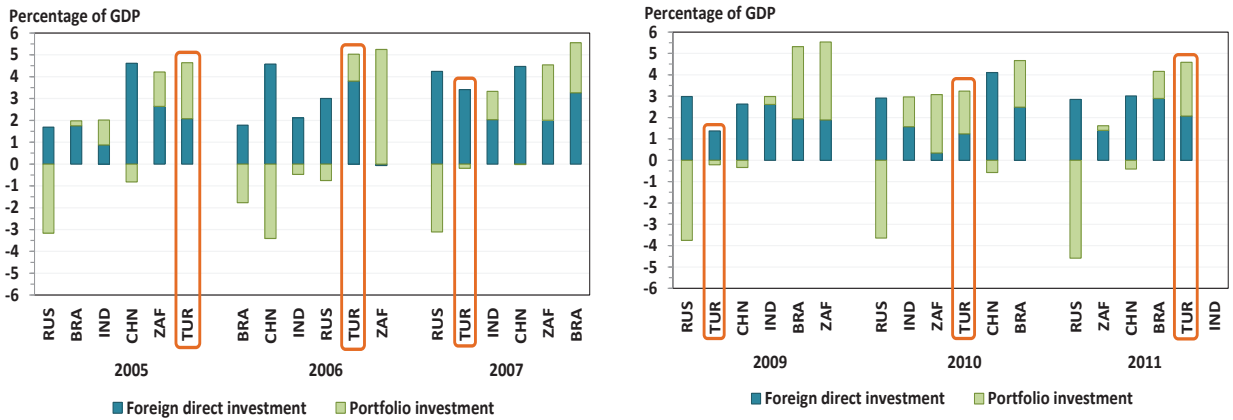
1.27. **Private investment has played an important role in growth dynamics over the past decade.** Indeed, capital investment contributed proportionately more to economic growth during the past decade in Turkey than in most other emerging market peers, except for India and China (Figure 1.14). The average annual investment rate in Turkey over the period 2002-2012 was about 19.2 percent of GDP, comparable to levels observed in emerging economies such as Brazil and Russia and about the same as the EU and OECD averages. Investment rates in Turkey are about half of those in China and significantly lower than average for all developing countries. Such levels of investment might suggest that there is room for increasing the level of investment, but how any increase in investment would be financed is an essential consideration in the Turkey context. Without higher levels of domestic savings to finance more investment financing greater investment through more capital inputs could come at the cost of even greater volatility and ultimately damage medium-term growth prospects.

1.28. **The financing of private investment is a concern for both growth and fiscal dynamics going forward.** Turkey as many other emerging markets relied on foreign capital inflows to boost private investment (Figure 1.14). An important consequence of the second phase of the ‘Great Moderation’ (the 2000s) was that capital from advanced countries flowed into emerging market economies in search of higher yields. Turkey was a key recipient of these flows which came in the form of both short-term portfolio flows and FDI (Figure 1.14). There are two concerns related to the short-term portfolio flows. The first is that they are quick to retreat during signs of economic and political troubles leaving the financing of the current account deficit uncertain. Current political events and the possibility that the ultra-low yields in developed economies may begin to rise with the tapering of the Federal Reserve Bank’s quantitative easing policy explains the recent capital outflows and the consequent depreciation of the Lira. The second concern is that the short-term portfolio flows did not necessarily pay for imports of capital goods, but rather financed a general widening of the current account deficit. Current global and domestic conditions indicate that Turkey may struggle to sustain foreign financed private investment growth in the period lying ahead and this has fiscal consequences. Tax policy reform will need to take center stage to make up for revenues that may no longer flow as they did in the 2000s during the foreign financed growth boom.

Figure 1.14. Turkey: Sources of Growth and the Great Moderation



Source: World Bank staff calculation, Penn World Tables.
 Note: Cobb-Douglas production function with capital share of 0.33.

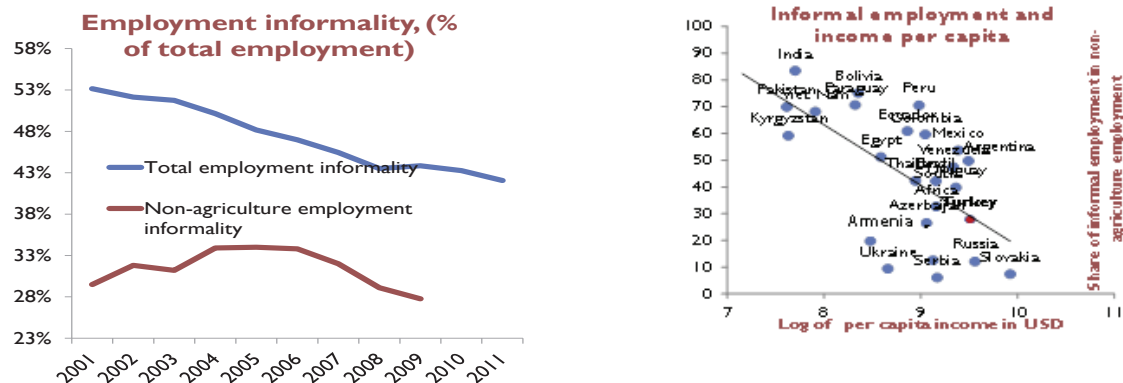


Source: World Bank Development Indicators 2012.

Fiscal Policy and Employment

1.29. **Ongoing structural change has supported the rise in social contributions.** The dramatic increase in social contributions observed over the last decade was not the result of increasing contribution rates, indeed rates in 2008 came down by 5 percentage points, but rather the result of more workers coming into the formal sector. Part of the dramatic structural change that has taken place in Turkey over the last decade has been labor shedding in the agriculture sector, which has in turn reduced informal employment in the country. Turkey is now about where one would expect it to be given its level of development in terms of the amount of informality in the manufacturing sector (Figure 1.15).

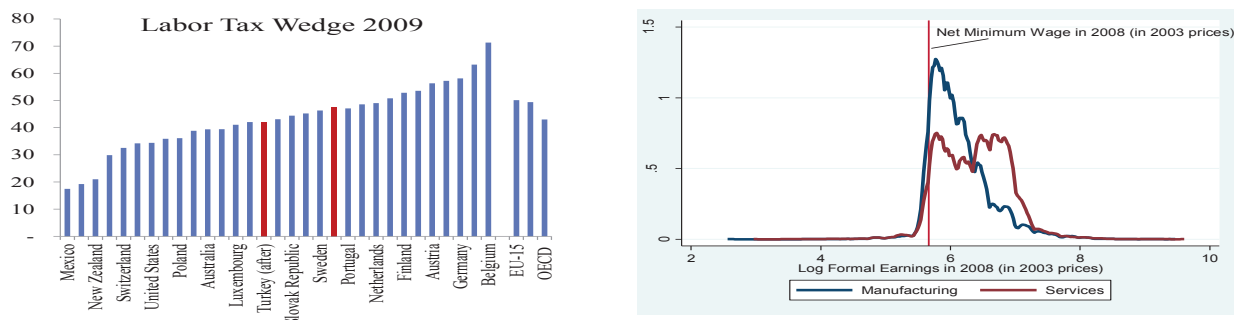
Figure 1.15. Turkey: Falling Informal Employment



Source: Turkstat and ILO.

1.30. **Going forward the pace of structural transformation is likely to slow down and the still high labor tax wedge may become a more binding constraint to formal sector employment creation than over the past decade.** This in turn would have consequences for the collection of social security contributions and may increase the size of the social security fund deficits. The labor tax wedge in Turkey is high relative to the OECD and other fast growing emerging markets. Estimates from the late 2000s (Leibfritz 2009) put the labor tax wedge of a single earner household (married with two children) at 42.7 percent, well above the OECD (unweighted) average of 27.3 percent. After a 2008 government initiative to lower payroll taxes and employee contributions, the labor tax wedge is down to about 38 percent, which is still high relative to other fast growing emerging markets (Figure 1.16). With a large share of government revenues coming from payroll taxes and indirect consumption taxes, the government’s minimum wage policy is also relevant to the tax policy discussion. Ad hoc increases in the minimum wage over the last decade have brought the minimum wage to 71 percent of the median wage in Turkey, the highest in the OECD, and arguably binding in most segments of the labor market (Figure 1.16). While the increases in the minimum wage may have increased tax revenues from consumption taxes and payroll taxes by discouraging formal sector employment it may have an equally large or even larger offsetting effect. Moreover, larger informal sectors are associated with lower measured private savings, given the lack of formal savings options for those in the informal sector (Schneider 2010).

Figure 1.16. Turkey: Labor Market Constraints



Source: OECD.

Note: Labor tax wedge is calculated as the marginal rate of income tax plus employee and employer contributions less cash benefits.

1.31. **The rise in indirect taxes may also negatively impact private savings.** Indirect taxes and the proliferation of special regimes and exemptions (World Bank 2006) create price distortions that may promote the informal sector and undermine the tax base and private savings. Moreover, direct effects on private savings are also likely present. At current income levels it is possible that the increase in the cost of consumption may reduce savings, particularly at low income levels although this would have to be tested empirically in the case of Turkey.⁶ On the expenditure side, the high and rising spending on social benefits and transfers may also be dulling incentives for households to save. The determined effort by the government to reduce life-cycle risks in recent years may have succeeded to the point of negatively affecting household savings behavior (Chapter 2). Ultimately the size of these impacts is an empirical question and the subsequent chapters will look into the magnitude of the effects in a general equilibrium framework.

⁶ Empirically this effect is found to be smaller than direct wage taxation in a number of other country contexts.

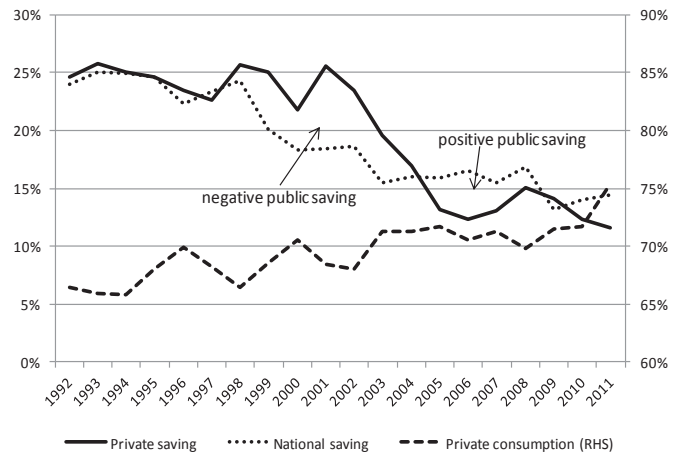
Chapter 2. Fiscal Policy and National Saving

A. INTRODUCTION

2.1. A bevy of recent studies have noted the low level and large decline in private saving in Turkey over the last decade and a half.⁷ Private saving rates dropped off particularly steeply during the early 2000s, falling from around 25 percent of GDP in 2001 to 12.5 percent in 2006 (Figure 2.1). Since then, private saving rates have fluctuated between just under 12 percent in 2011 and 15 percent of GDP. The decline of national saving since the late 1990s has been very close to that of private saving—about 10 percentage points of GDP. The decline in private saving provided room for more private consumption, which was a key driver of the robust rates of economic growth in the decade.

2.2. The various analyses of Turkey's private saving trends broadly agree on the drivers for the decline in private saving rates. Key explanatory factors include improved macroeconomic and political stability, greater access to credit, demographic trends, and the expansion of social insurance. The implications for Turkey's future economic prospects and for policy are less clear-cut. With a reduced pool of private savings to draw on for investment, does Turkey risk undermining future economic growth? Or does it cause an over-reliance on external capital inflows to meet investment needs, which may expose Turkey to risks of reversals in capital flows triggered by events outside of its borders? And what should be done to raise private savings and forestall such implications? What role is there for fiscal policy and public savings?

Figure 2.1. Turkey: Saving and Consumption
(percent of GDP)



Sources: Ministry of Development and IMF's World Economic Outlook databases.

2.3. The objective of this chapter is to investigate the links between fiscal policy, private savings behavior and future economic growth prospects. The next section puts the Turkish experience with private saving in an international context in an effort to understand if the decline in private saving rates in Turkey as well as its present level is exceptional or similar to other country experiences. Following that is an analysis of household micro data for a better illustration of factors that drive private saving. This includes the impact of public policy and motivates a look at the likely future path of private saving. Finally, we consider the links between economic growth and private savings how this relationship might evolve over time.

⁷ Including IMF (2012), Matur, Sabuncu and Bahçeci (2012), Van Rijckeghem (2012), and World Bank (2012).

2.4. **The main messages in this chapter can be summarized as follows:**

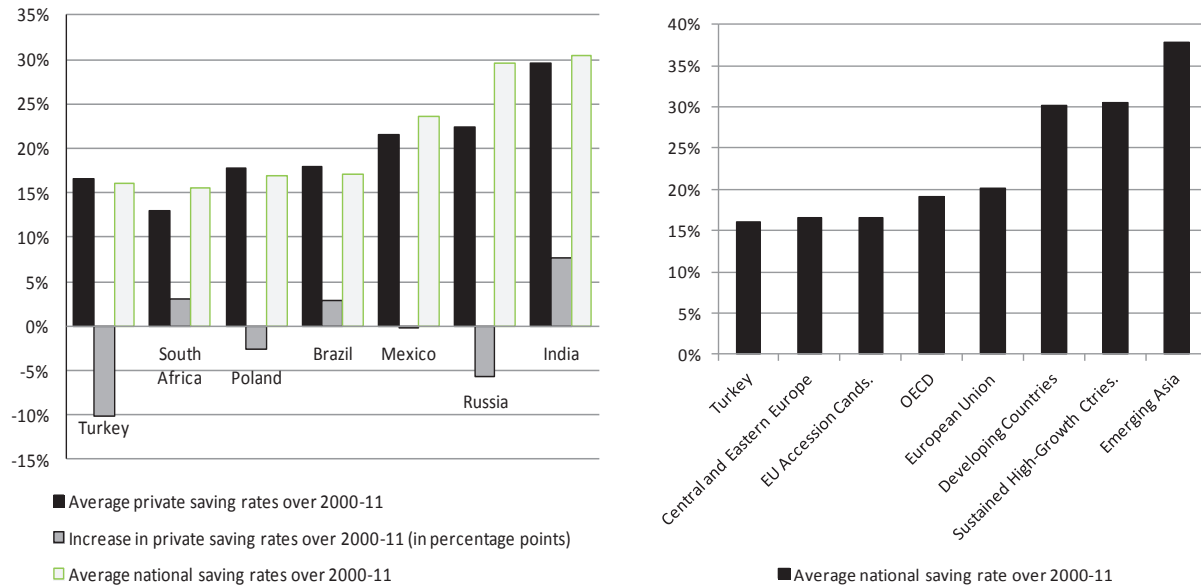
- a. **Turkey's decline in national savings is neither puzzling, nor extraordinary** relative to other countries that have come out of periods of significant macroeconomic uncertainty. Consistent with other savings analysis done on Turkey we find that the macroeconomic stabilization effort reduced pre-cautionary reasons to save and the decline in real interest rates supported borrowing for consumption.
- b. **The low levels of domestic saving rates have meant that foreign sources of finance have filled in to support the high growth rates achieved over the past decade.** This has led to high current account deficits and volatile economic growth. Rebalancing to more domestic sources of financing for sustainable long-term growth has rightly been a priority for policy makers in Turkey.
- c. **The objective to increase domestic saving rates presents a fiscal policy trade-off.** Our policy simulations indicate that higher domestically financed growth is inconsistent with continued fiscal prudence. A higher private saving rate implies lower tax revenues from consumption taxes. Under various scenarios we model the fiscal deficit is projected to increase to 4.5 percent of GDP or more in the medium-term if more domestically financed growth is achieved.
- d. **A shift to higher effective taxation of capital is a possible way out.** Labor in the formal sector is highly taxed through both payroll taxes and consumption through the high levels of indirect taxation. Capital on the other hand is taxed at much lower effective rates. A relatively small increase in the effective capital income tax rate from 3.3 percent to 5 percent – which could better be thought of as an improvement in enforcement of corporate income tax collection – can offset the decline in indirect tax revenue coming from higher private saving rates. The government's ambition for more domestically financed, high growth and continued fiscal prudence is achieved in this scenario.

**B. PRIVATE SAVING TRENDS: TURKEY AND
INTERNATIONAL EXPERIENCE**

2.5. **The Turkish saving experience since 2000 is an outlier among comparator countries.** Among a group of seven large countries at comparable levels of development, only South Africa has lower private and national saving rates while no country has seen a sharper decline in the rate of private saving over the period 2000-11 (Figure 2.2).⁸ Russia comes closest in terms of the drop of private saving rates, but its decline is only about one half of Turkey's and Russia started off at a substantially higher level of private saving. Circumstances were also quite different between the countries during a period when Russia reaped the benefit from higher world prices for oil and other natural resources it has in abundance, unlike Turkey. Turkey's experience contrasts particularly starkly with India and Mexico which have private and national saving rates in the range of 20-30 percent of GDP and saw their private saving rates remain stable or increase since 2000.

⁸ Unless indicated otherwise, this Chapter makes reference to saving measured in gross terms that is without accounting for depreciation (asset depreciation is subtracted in net saving).

Figure 2.2. Saving Trends in Turkey and Comparator Countries over 2000-11
(percent of GDP unless indicated otherwise)



Sources: Ministry of Development and IMF’s World Economic Outlook databases.

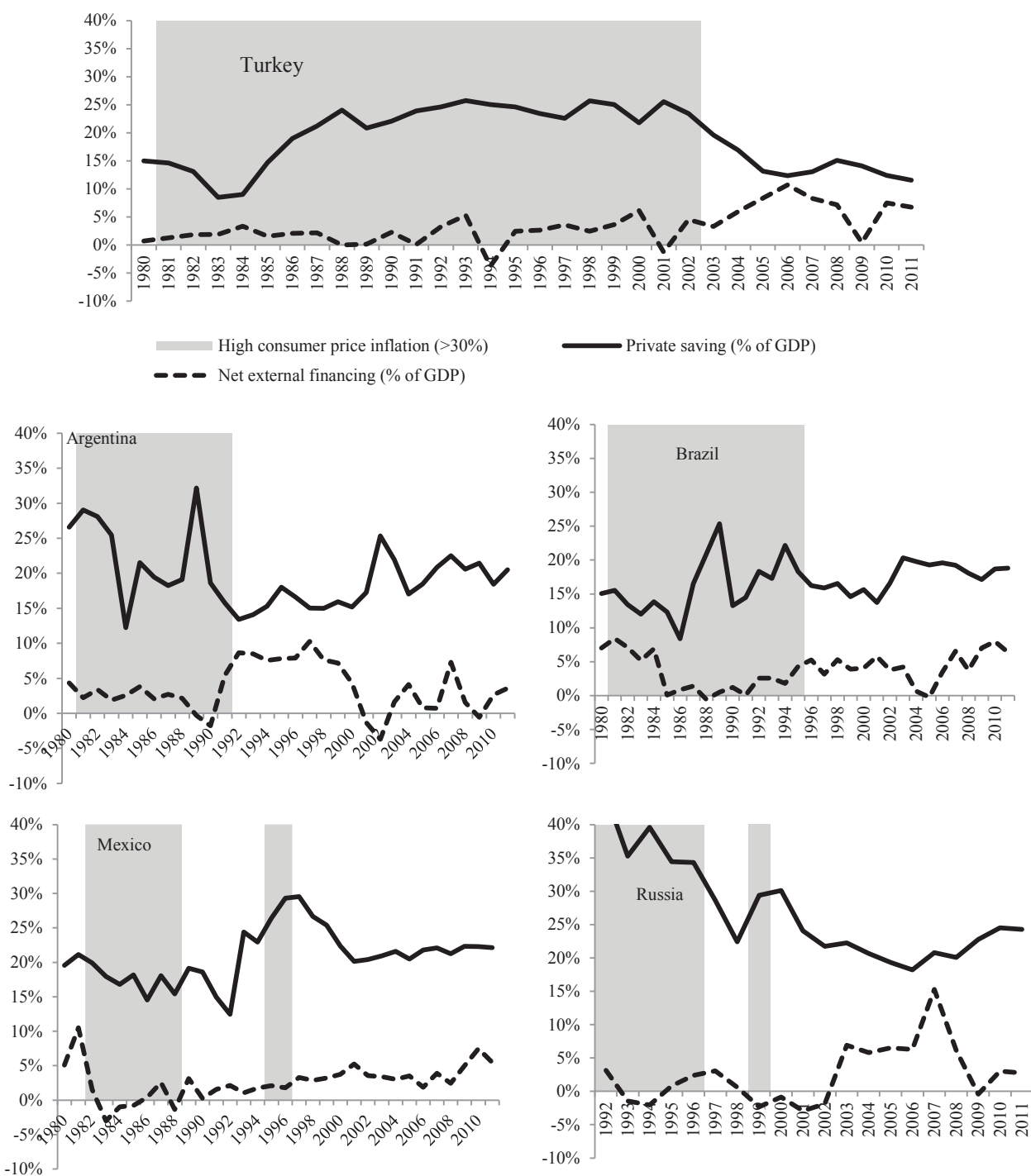
Note: Sustained High-Growth Countries include Botswana; Brazil; China; Hong Kong SAR, China; India; Indonesia; Japan; Korea; Malaysia; Malta; Oman; Singapore; Taiwan, China; Thailand; and Vietnam. Other groups are taken from IMF’s World Economic Outlook database.

2.6. National saving is closely associated with private saving—and is also lower than in comparator countries. Declines in national saving rates outstrip those in other countries—Turkey has seen a larger decline in national savings over the last twenty years than any other G-20 country (see also IMF, 2012). The average level of national saving in Turkey during 2000-11 was about half of that in Sustained High-Growth and Developing Countries, and even lower compared to Emerging Asia (Figure 2.2). However, it is roughly comparable to the average in Central and Eastern Europe and EU Accession Countries.

2.7. A different set of comparator countries offers insights into Turkey’s private savings experience. Looking at those emerging economies that have also experienced high inflation episodes offers potential lessons for Turkey going forward. In this context, Turkey is no longer an outlier. In Brazil, for example, saving rates fell for 10 years towards the end of their high-inflation period (Figure 2.3). In Lebanon, following high inflation private saving dropped by some 20 percentage points of GDP for nearly 15 years before rates picked up again. Argentina and Russia had similar experiences. As expected, declines in private saving were in most cases accommodated by increased external financing. Macroeconomic stability provided these countries with greater access to foreign credit markets, which was then used to expand domestic credit to address both existing credit demand that was not met during the period of instability and new needs due to improved perceptions of economic opportunities and wealth.⁹

⁹ High-inflation episodes are counted as 5 years or longer of consumer price inflation in excess of 30% per year. Such high rates are infrequent—inflation rates reach this level in 1 out of 10 years across all countries in 1980-2011. During these years, 32 countries had high-inflation episodes lasting 5 years or longer, including the countries shown in the figure

Figure 2.3. Private Saving and Net External Financing
During and After High-Inflation Episodes



Sources: Ministry of Development and IMF's World Economic Outlook database.

Note: High-inflation episodes are counted as 5 years or longer of consumer price inflation in excess of 30% per year. Such high rates are infrequent—inflation rates reach this level in 1 out of 10 years across all countries in 1980-2011. During these years, 32 countries had high-inflation episodes lasting 5 years or longer, including the countries shown in the figure.

2.8. **What about the post-stabilization period?** These country cases also indicate that private savings also begin to rise when stabilization efforts take hold. Private savings have trended up in all countries to varying degrees after about 5 to 8 years of stabilization. While the global crisis of 2009 interrupts the trends to a certain extent, Turkey's most recent low levels of private savings is a concern considering that each of the countries highlighted did experience a rise in private savings once stabilization was established. In Turkey, the rate of private saving has been closer to 10 percent for the past three years.¹⁰ The glut in global credit markets and historically low interest rates may be an explanatory factor for Turkey, but Argentina, Brazil and Russia have seen upticks in private saving at the same time when also they pulled in larger inflows from abroad. Unfortunately, there are too few high inflation cases to assess the validity of these stylistic assessments through statistical analysis. In the next section we turn to household level data for Turkey to better understand private savings dynamics and the role of public policy.

C. PRIVATE HOUSEHOLD SAVINGS BEHAVIOR: AN EXAMINATION

2.9. **To understand saving trends in Turkey, the concept of saving and its measurement deserves some scrutiny.** The standard saving concept, which can be defined as the change in the entity's *net wealth*—that is the change in the value of net assets between the beginning of the period over which saving is measured and the end.¹¹ Accumulation of net assets is a key determinant of net wealth and net wealth will rise over time as the entity's assets gain value. However, a key missing element of this concept is inflation, which erodes the value of financial assets. The result given Turkey's high inflation episode is that the private saving decline in Turkey is overstated somewhat by the traditional manner in which saving are measured. If inflation is compensated through higher nominal interest rates, as was the case in Turkey during the period of high inflation through about 2002, households would increase their holdings of financial assets to offset the erosion of their value due to inflation. So, during high inflation periods, private saving is overstated while public saving is understated.

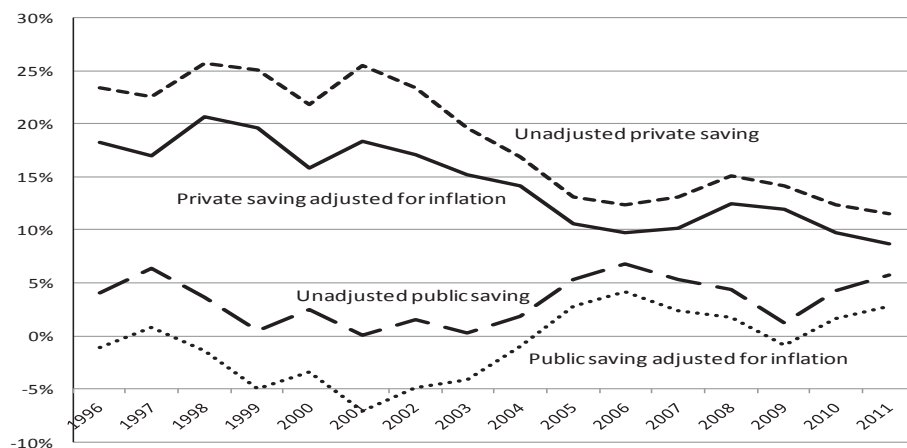
2.10. **Adjusting private savings for inflation does not change the main conclusions.** As inflation has come down in Turkey from over 50 percent through 2001 and in the 5-10 percent range from 2003 onward, the extent of this overstatement of private saving rates has narrowed as well. In other words, some of the decline in private saving has been due to a smaller impact of inflation on the measured rate of saving. Since public saving is distorted by the same amount in the opposite direction, adjusting for inflation does not have an impact on national saving.¹² After taking into account the substantial impact of inflation on the measurement of private saving, Turkey remains at the fringes of comparator countries over the past decade. Reduced inflation accounts for about one-third of the decline in private savings since 2001. After adjusting for inflation, the drop in the private saving rate between 2000 and 2011 is narrowed from 10 percent to 7 percent (Figure 2.4). Although the decline is smaller than before, it still is the largest among comparator countries where inflation was more stable and did not cause a similar pattern of distortion in reported public saving rates (see Figure 2.4).

¹⁰ This may be due to exceptional and temporary circumstances related to the global financial crisis of 2008-09. Losses in capital markets translated into a decline in the financial wealth of households from 96 percent of GDP in 2007 to 58 percent in 2008 (see Telli and Çavdaroğlu, 2011).

¹¹ Loayza et al. (2000) provide a practical guide for addressing this measurement issue. Van Rijckeghem and Üçer (2009) apply this to the case of Turkey.

¹² The analysis here does not account for adjustments to national saving from the impact on exchange rate changes on the value of net foreign assets. Under most circumstances, this impact would be small compared to effect of inflation in the case of Turkey.

Figure 2.4. Private and Public Saving Rates Before and After Adjusting for Inflation
(percent of GDP)



Sources: Van Rijckeghem and Üçer (2009) and databases of the Ministry of Development, Treasury and IMF's World Economic Outlook, International Finance Statistics, and staff calculations.

2.11. Home ownership and household health spending exert strong effects on savings behavior.

Similar to other empirical work on the subject our evidence suggests that socio-economic status, precautionary motives, and demographics are strong drivers of household saving in Turkey (see Annex II for details on the regression analysis). Unlike previous work, we find that homeownership substantially lowers household saving rates by an estimated average of 3 percent of disposable income. The key implication here is that as this wealth effect eases over time, savings rates would be expected to trend up. Additionally, we identify a way to correct household data for the underreporting of income by dropping very large dis-savers and estimating the extent of underreporting by key groups who bias the HBS data. The key reason to make this correction is to be able to independently control for the effect of household health spending risk on the household savings rate, which we find to be strongly correlated. The implication of this relationship is that government spending on health is strongly related to private savings behavior. The regression analysis using data from the 2010 Household Budget Survey shows that:

- **Saving rates rise with higher income.** This is a standard result across countries. In the case of Turkey we find that for a one percent increase in income, saving rates increase by just 0.3 percentage points. This may reflect the response to temporary or unanticipated changes in income as households aim to smooth their consumption over their lifetime. It would also be consistent with saving behavior driven by precautionary and bequest motives.¹³ The relationship implies that private saving rates rise over time as a result of economic development and increasing household disposable income.¹⁴
- **Home ownership leads households to save less.** A first home lowers the average household saving rate by 3½ percentage points and this drops by a further 4 percentage points for owners of a second home. As a large proportion of households own their home in Turkey,¹⁵ this translates into a substantial reduction in average household saving rates of about 3 percentage points as a result of homeownership. The experience during the global financial crisis would tend to

¹³ See Dynan, Skinner and Zeldes (2004).

¹⁴ Loayza et al (2000), Matur, Sabuncu and Bahçeci (2012) and World Bank (2012) indeed find such a relationship in analyses of cross-country panel data. Carroll and Weil (1994) demonstrate that economic growth causes saving and not the other way around.

¹⁵ Of households surveyed in the HBS 2010, about two-thirds owned their home and just under 10% owned a second home.

reinforce the trend towards saving in real estate, when house values fell much less sharply (by about 5 percent in 2008) than financial wealth (which declined by about 40 percent in the same year).

- **Households raise their savings significantly in response to a high risk of large spending for health care and involuntary unemployment.** This suggests that short-term income risks are a key driver for saving decisions and that social security arrangements are an important factor affecting savings behavior over time.
- **Household composition is also a key factor for household saving decisions.** Younger families and less educated households save more, likely in response to larger uncertainty about future income and spending needs. This strengthens the finding that precautionary motives, both near term and further in the future, are important for understanding household saving.
- **Having a female spouse in the household who does not participate in the labor market significantly lowers household saving rates.** In other words, increases in female participation rates raise household saving.

2.12. **This analysis sketches a mixed picture of the outlook for the direction of private saving rates.** The adjusted savings data indicates that part of the decline in private savings from 25 percent of GDP in 2001 to 12 percent in 2011 is likely to persist in the foreseeable future, as measured private saving rates were artificially boosted in the early 2000s due to the high inflation at the time.¹⁶ Another reason not to expect a rapid increase in private savings is based on the experience of other emerging markets which emerged from periods of high inflation. Macroeconomic stabilization has a lasting impact on credit conditions which reduce households' incentives to save—so even if initial wealth effects ease, private saving remains on a lower path. Nevertheless, private saving rates should resume a slow upward trend for the short to medium term. This is consistent with the experience of other emerging markets after successful macroeconomic stabilization and is also supported by the outcomes of the analysis of HBS data. As households further discount expectations that homeownership yields additional gains relative to other asset classes, their incentive to save would go up significantly. An upward trend in private saving rates would be further supported by growing household incomes and increased participation of women in the labor force.

2.13. **Policy options for raising private savings in the short term are limited, but can support a steady increase of saving rates over time.** The government has taken steps to promote nascent private pension schemes with a view to raising saving for retirement purposes, including through providing matching government contributions for participants. These reforms have taken effect as of the start of 2013 and the number of participants to the private pension scheme increased by 30 percent y-o-y since then and exceeded 4 million as of January 2014. But, at the same time, more can be done, including by supporting female participation in the labor force. One option is reviewing the taxation of capital gains on real estate, which presently exempts from taxation property that has been owned for at least 5 years (other capital gains are included in taxable income). Adjusting this exemption would reduce the wealth effect from homeownership and promote saving among homeowners (a majority of households).

2.14. **In the absence of ready options for rapidly bringing about significant increases in private saving rates, public savings will have to be raised.** This was also a key recommendation of a recent IMF study of saving in Turkey (2012). Raising public saving to reduce the reliance on foreign capital inflows would mitigate risks of adverse external events. To achieve this, fiscal targets need to be tightened. One obvious place to start would be measures to either close the deficit of the social security

¹⁶ Lowering of inflation accounts for 4½ percentage points of the decline in the private saving rate between 2001 and 2011.

funds or a government commitment to set aside the funding for these deficits upfront rather than through current transfers. This would offset reduced incentives for households to save for precautionary and lifecycle reasons.

D. POLICY SIMULATIONS

2.15. The policy simulations presented here and in the rest of the document are based on a dynamic-recursive computable general equilibrium (CGE) model. The model was built in close coordination with authorities at the Ministry of Development and is based on the unique characteristics of the Turkish economy. It is based on a social accounting matrix (SAM) that uses 2010 data estimated from 2002 input-output tables for the economy, the most recently available. The structural components of the model, including a detailed labor market and careful description of the tax system are presented in Box 2.1.

Box 2.1. A Computable General Equilibrium Model for Turkey

For the purpose of the present analysis an economy-wide recursive dynamic Computable General Equilibrium (CGE) representation of the Turkish Economy has been developed. It has a disaggregated labor market, a disaggregated sector representation, as well as detailed household breakdown has been developed. This model is designed to analyze economy-wide implications specific policy measures in the identified focus areas both in isolation as well as looking at any relevant combined effects. By applying the CGE approach the analyses attempts to overcome over-simplification and/or erroneous conclusions that are found by looking at only partial equilibrium results or simple first round effects of the economic policy measures.

The economy-wide label implies that the model has a specific level of aggregation in all sectors of the Turkish economy. The CGE specification implies that the model is a numerically specification of the demand and production relationships, the interrelationship between them, and is solved simultaneously for prices in all markets. The model is a recursive dynamic multi-sector growth model with economic growth arising from factor accumulation and capital augmenting TFP. The model has two parts - a static equilibrium part where commodity and factor markets are cleared and a dynamic part where investments net of depreciations are added to single capital type. The investment is derived as the sum of savings by the institutions of the model deflated by an aggregate price for investment goods. In each period capital is allocated to the productive sectors to equalize the real interest rate across it uses.

The labor market has been specified in considerable detail with 24 separate labor categories – segmented by gender, skills, age, and formality status – being supplied by 6 different types of households – separated by rural-urban location and income levels. Each household is initially given a specific endowment of labor with any demographic changes specified outside the model. Given the low level of labor participation by women in Turkey, labor supplies have been modeled as a choice between consumption of leisure (or home produced goods and services) and consumption of other commodities. Both employees and employers are choosing optimally to supply to or employ from the formal or informal labor market depending on relative after-tax wages. Binding minimum wages are specified for the lower skilled formal labor categories. In addition to the labor market, the model includes 17 productive sectors each producing a unique commodity that are traded domestically in competition with imported goods and/or exported internationally.

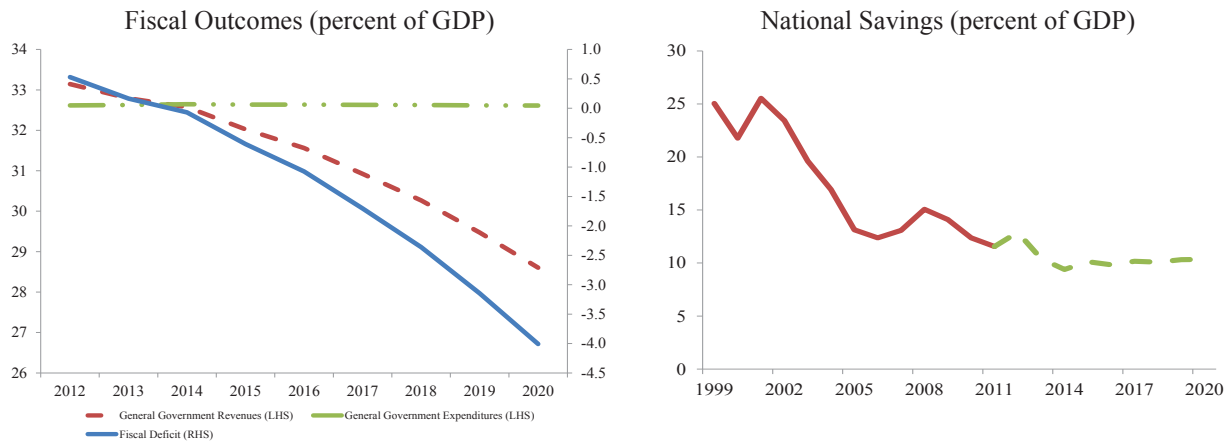
The Turkish government revenue system has also been given specific consideration. Personal income taxes, employees and employers social contributions are collected on formal labor categories only. Corporate income taxes are collected on all capital incomes. The government also collects indirect taxes on final domestic consumption expenditures. Finally, the government receives fees and fines from households and has additional non-tax revenue from ownership of equity in SOEs. Government expenditure and transfers to households are given exogenously.

The relationship with rest of the world is given by imports and exports of each commodity as well as any net-incomes from the external sector ownership of the Turkish capital stock as well as exogenous transfers to households. An exchange rate equilibrates the external balance. Annex I gives a detailed description of the model.

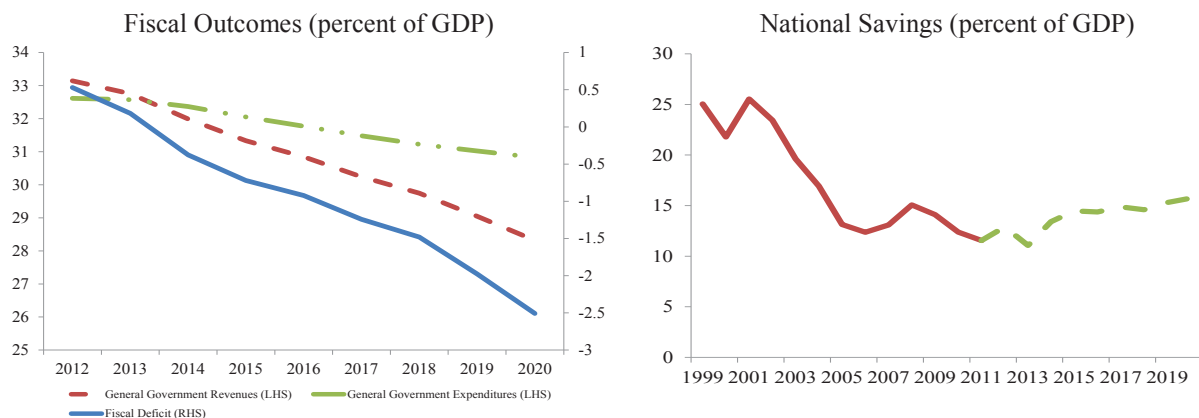
Scenario I. National Saving and Growth

2.16. **Expenditure rigidities and highly cyclical revenues lead to a growing fiscal deficit in a low growth environment.** The first two policy scenarios build on the international experience presented above and look at the possible evolution of national savings in a low growth and then in a high growth environment. The low growth scenario assumes real GDP growth averages 3 percent over the medium to long term and the current account deficit is fixed at 6 percent of GDP. This scenario could be considered a ‘2012 scenario’ in that it simulates the evolution of key macroeconomic variables when economic growth is at 3 percent and the Central Bank of Turkey tries to limit external imbalances. The effect of monetary policy is to achieve the 6 percent CAD as was roughly the case in 2012. With no additional stabilizing fiscal policy measures, the key results indicate a growing fiscal deficit as rigid expenditures remain elevated and revenues decline by 4 percentage points of GDP by the end of the projection period. The overall fiscal deficit increases to 4 percent of GDP. National savings decline in this scenario and remain close to 10 percent of GDP by the end of the projection period.

Figure 2.5. Turkey: Fiscal and Savings Outcomes under Two Growth Scenarios
‘2012 Growth Scenario’



‘High Growth scenario’



Source: WEO and Authors’ calculations.

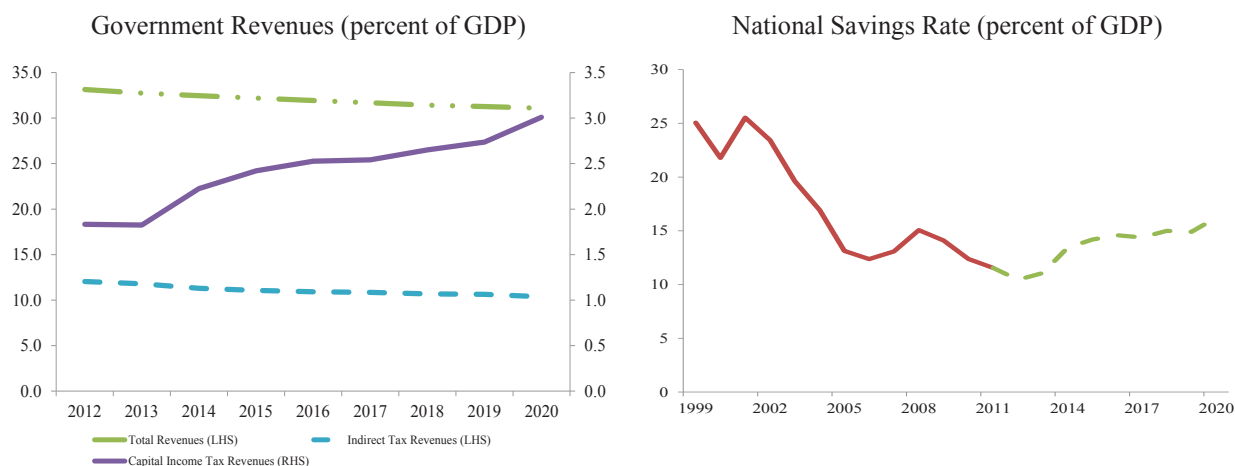
2.17. **More domestically financed growth implies lower revenues from indirect taxes.** The high growth scenario assumes real GDP growth of 6 percent and again assumes a CAD of 6 percent. A combination of increases in factor inputs – employment and capital – as well as enhanced TFP growth

generates the high growth scenario. The main point to highlight here is the evolution of national savings, which while increasing to finance the higher growth still remains low in comparison with countries with similar levels of development. National saving rises to almost 16 percent of GDP by the end of the projection period. Higher saving rates are generated in this scenario because TFP growth is sustained at growth rates of 1.75, which is at the high end of international experience. The main point to highlight is that the higher private saving rates imply lower revenues from indirect taxes. This is driving fiscal outcomes in this scenario, where the fiscal deficit increases to 2.5 percent by the end of the projection period. Importantly, this suggests that given the current tax structure which is heavily reliant on indirect taxation it is not feasible to both significantly raise national savings and ensure long-term fiscal sustainability. Foreign financed growth with low national saving rates gives higher growth and fiscal prudence, but with the present tax system, higher growth rates, a balanced budget *and* significantly higher national saving rates are internally inconsistent.

Scenario II. National Saving and Tax Policy: Capital Income Tax

2.18. **Changes in the tax system could help support more domestically financed growth while maintaining fiscal prudence.** Labor in the formal sector is highly taxed through both payroll taxes and consumption through the high levels of indirect taxation. Capital on the other hand is taxed at much lower effective rates. Higher tax revenues from capital income could help support the government’s drive for more domestically financed growth and fiscal prudence. This scenario illustrates the power of a small change in capital income tax revenues. We model an increase in the effective capital income tax rate from 3.3 percent to 5 percent. Such a small increase could be achieved through improved enforcement of tax collection and does not require an explicit increase in corporate income tax rates.¹⁷ In this scenario, the increased capital revenue more than offsets the decline in indirect tax revenue and allows for a roughly balanced budget by the end of the projection period. National savings increases to levels slightly above 16 percent of GDP.¹⁸

Figure 2.6. Taxing Capital Income



Source: Bank staff calculations based on model simulations.

¹⁷ The tax base proxy for corporate income taxes is assumed to be the operational surplus of all corporate activities, including housing and real estate.

¹⁸ The increase in investment and hence real GDP growth comes from the increase in the operational surplus that results from the increase in revenues from the effective capital income tax rate. The overall increase in national savings drives the increase in investment.

Box 2.2. Turkey: Government Revenue Composition in International Perspective

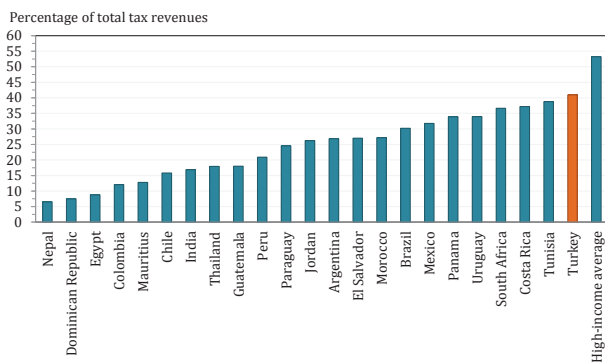
Turkey’s revenue structure has features that resemble a typical high-income country and others that strongly resemble middle-income countries. Government revenues from personal income taxes and social security contributions are close to high-income country averages, but higher than most other middle-income countries. Similarly, corporate incomes tax revenues are close to, but below, high-income averages, while being well below other middle-income country comparators. Revenues from consumption taxes and property taxes resemble more closely middle-income country tax structures than those of high-income countries.

Developing countries usually extract more of their tax revenue from consumption taxes whereas high-income nations tax income more heavily (Acosto-Ormaechea and Yoo, 2012). Turkey does both. Turkey has high income country levels of personal income tax revenue and middle-income country levels of consumption taxation. There appears to be little room for extracting more revenues from these taxes. However, it does appear that there is room to improve revenues coming from corporate income taxes and property taxes. Corporate income tax rates are not relatively low, but the efficiency of the revenues collection is relatively low (IMF 2010). Better enforcement and or broadening the corporate tax base would improve efficiency.

Property tax revenues are well below high income country averages, but are at or below other middle income countries. Given that there is little room to increase consumption taxation and personal income taxation, increasing property taxation revenues may be one area to increase revenues. Property taxation is generally viewed as one of the more equitable and efficient means of raising tax revenues. Moreover, recent empirical work on tax composition and growth indicates that a shift from income taxes to property taxes has a strong positive association with long-run economic growth (Acosto-Ormaechea and Yoo, 2012). It also seems warranted given the seeming over-investment in housing in the country (see chapter 4).

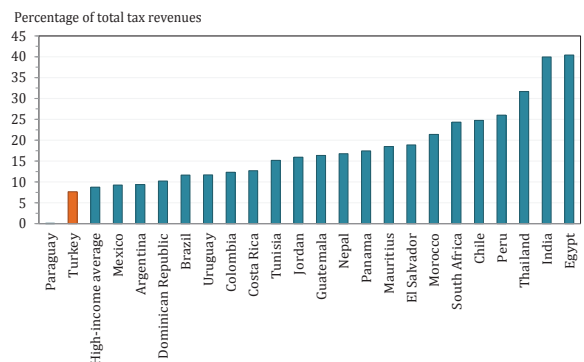
The benchmarking exercise indicates that Turkey could change its revenue composition to become more high-income in terms of property taxation, corporate taxation and its consumption taxation, but less high-income in terms of its personal income taxation (including social security contributions). While outlining a tax reform program is beyond the scope of this work, the suggested compositional changes can be done in way that supports fiscal sustainability and economic growth. Given the structure of the economy (see next chapters) and the international empirical evidence, this suggested compositional change would have an important long term growth impact. The simulation results below support this view.

Figure 2.7: Personal income and payroll taxes, and social security contributions as a share of total tax revenues in 2009



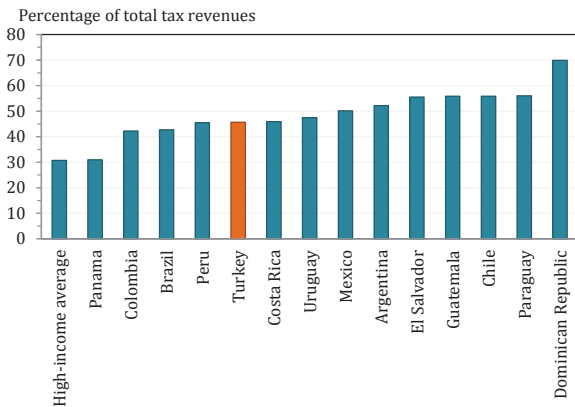
Sources: OECD and Acosta-Ormaechea and Yoo (2012).
 Notes: Reporting is at the general government level except the following: Cyprus, Egypt, India, Jordan, Mauritius, Morocco, Nepal, Thailand, Tunisia, and South Africa.
 Social security contributions are calculated as total income taxes minus corporate and personal income taxes for Egypt.
 Personal income taxes are calculated as total income taxes minus corporate income taxes and social security contributions for Nepal.

Figure 2.8: Corporate income taxes as a share of total tax revenues in 2009



Sources: OECD and Acosta-Ormaechea and Yoo (2012).
 Notes: Reporting is at the general government level except the following: Cyprus, Egypt, India, Jordan, Mauritius, Morocco, Nepal, Thailand, Tunisia, and South Africa.

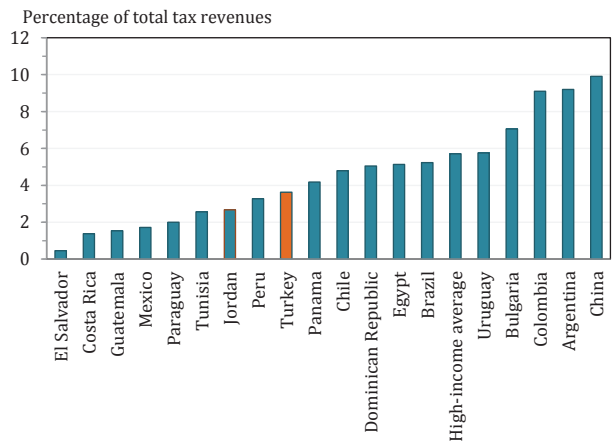
Figure 2.9: Consumption taxes as a share of total tax revenues in 2009



Source: OECD.

Note: Reporting is at the general government level.

Figure 2.10: Property taxes as a share of total tax revenues in 2009



Source: OECD and Norregaard (2013).

Note: Reporting is at the general government level. Bulgaria, Egypt and Tunisia as of 2010.

Note: Data coverage and quality are common issues when doing international tax revenue benchmarking. The sources used here are chosen for their comparability and quality. The country coverage therefore is not the same for each revenue component.

Scenario III. National Saving and Tax Policy: Indirect Taxes

2.19. Reducing indirect taxes would raise private savings, but not by enough to justify a policy intervention. Reducing income taxes and increasing consumption taxes or indirect taxes is typically viewed as a way to bolster private saving rates. Given the high levels of indirect taxes there is limited opportunity for this type of change in Turkey.¹⁹ Indeed, given the high levels of indirect taxation in the country there is reason to expect that the income effect of reducing indirect taxes (higher savings rate) may be greater than the substitution effect (more consumption), particularly at lower income levels and for those commodity groupings with high estimated expenditure elasticities (see Ardic et al 2010). To get a sense of this potential effect, we simulate a 20 percent reduction in indirect taxes with an offsetting increase in capital income tax to maintain fiscal prudence. Private saving rates increase, but the effect is very small at just 0.3 percent of GDP. Labor formality also increases as we would expect, but again the effect is marginal. Moreover, an unintended consequence of such a policy action is its effect on reducing low-skilled employment as lower consumption goods prices induce more employment in higher skilled service sectors. Based on these results it does not appear that changes in indirect taxes will significantly impact private saving rates in Turkey.²⁰

¹⁹ This is not to say that increases on specific commodity groupings would not be called for. We do not have the level of tax detail required to be more specific.

²⁰ The model simulates the indirect tax effect on formality through the incentives in the self-correction mechanism, not due to any price incentives. That is, a decrease in indirect taxes will make formal prices more attractive and increase formality. The increase in the level of private savings is due to the increase in disposable income when less taxes are collected. However, national savings might decline if the capital income tax offset is not enough to stem the fall in revenues from indirect tax revenues.

Chapter 3. Financing Investment for Growth

A. INTRODUCTION

3.1. **Public investment has long been recognized as an instrument of economic and fiscal policy by which governments can promote competitiveness, regional development and productivity growth.** While it is generally agreed that public investment, especially in core infrastructure, has a positive effect on the pattern of economic growth (Calderon, Moral-Benito and Serven 2011), the magnitude of the effect depends on the government's ability to select good projects and the (relative) scarcity of infrastructure services. Turkey's growth model has changed significantly with the introduction of structural reforms aimed to strengthen the role of market forces in the early 1980s and that shift changed the role of the public sector in promoting investment. The share of public investments in industrial sectors shrunk as a result of liberalization processes and accelerated with the fiscal consolidation after the 2001 crisis. The general shift was toward spending in areas of social infrastructure and supporting private investments through Public Private Partnerships (PPPs) and incentives policies.

3.2. **Fiscal policy continues to play an important role in creating incentives for private investment.** On the expenditure side, public investments remain important part of provision of core infrastructure, often as a precondition for private investment. On the revenue side, tax policy is one of the key elements that affect the incentives for the private sector. Fiscal policy complements the government's efforts to improve the investment climate, human resource and skill availability and financial market development that all aim to provide a better enabling environment for private investment and economic growth. The objective of this chapter is to investigate linkages between fiscal policy and investment in the context of creating conditions for sustainable and inclusive growth. The chapter focuses on three closely interrelated questions: (a) is the current capital stock level a drag on sustainable growth in Turkey, (b) are existing public policies supporting investment growth and (c) what are the fiscal implications of government policies to support investment in Turkey?

3.3. **The main messages in this chapter can be summarized as follows:**

- a. **Although Turkey's per capita capital stock is lower than most of its peers', the level of investment appears to be less of a concern for current and future growth prospects than its composition.** Given a relatively low investment to GDP ratio by emerging market standards, Turkey's per capita capital stock lags behind its peers. However, the difference is small and far from being a binding constraint for growth. Yet, Turkey has a relatively large share of investment in housing. Although residential building may have a favorable labor-capital ratio, its capital-output ratio is unfavorable in comparison with many other investments.
- b. **The increase in the investment rate over the last decade was in large part foreign financed.** Heavy reliance on external financing contributed to an increase in investment volatility. The volatility of investment in Turkey is significantly higher than in benchmark countries. The high contribution of the capital stock, in combination with a volatile investment rate, has contributed to Turkey's growth volatility observed over the last decade.
- c. **The increasing concentration of public investment in core infrastructure has had a positive impact on private investment growth.** We find empirical evidence that public investment in core infrastructure, defined as energy, transportation and communications,

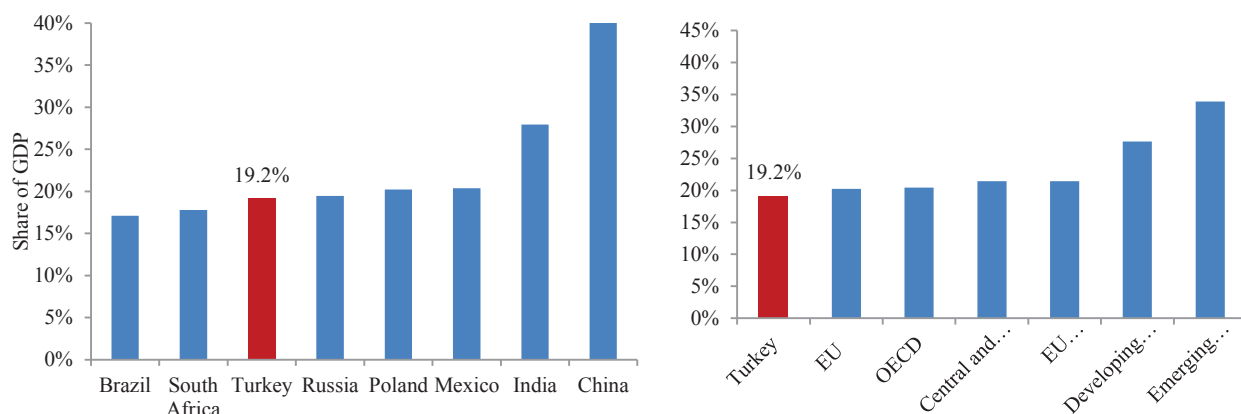
crowds in private investment. A key implication of this finding is that the composition of public investment contributes to a more domestically financed growth model in the medium term by complimenting increases in private investment in the long term.

- d. **Policy simulations indicate that property tax increases and an increase in public investment can support more domestically financed, less volatile economic growth.** More *effective* capital taxation can promote a better allocation of investment to more productive sectors and away from housing through a property tax increase. Moreover, increasing public investment by 2 percent points of GDP can result in sustained real GDP growth at over 5 percent compared to the baseline growth rate of 3 percent. The current account deficit is sustained at just below 6 percent of GDP. Critical to the results is that government spending on core infrastructure is in high return projects. The key to realizing this is to improve the institutional and regulatory environment for public investment.

B. IS INVESTMENT A DRAG ON SUSTAINABLE GROWTH IN TURKEY?

3.4. **The average annual investment rate in Turkey is similar to OECD comparators, but lower than in Emerging Asia.** The average annual investment rate in Turkey over the period 2002-2011 was about 19.2 percent of GDP, comparable to levels observed in emerging economies such as Brazil and Russia and about the same as the EU and OECD averages. Investment rates in Turkey are about half of those in China and significantly lower than average for all developing countries (Figure 3.1). Such levels of investment might suggest that there is considerable room for increasing the level of investment, but how any increase in investment would be financed is an essential consideration in the Turkey context. Without higher levels of domestic savings to finance more investment financing greater investment through more capital inputs could come at the cost of even greater volatility and ultimately damage medium-term growth prospects.

Figure 3.1. Turkey and Comparator Countries: Average Investment Rates (share of GDP) (2000-2011)

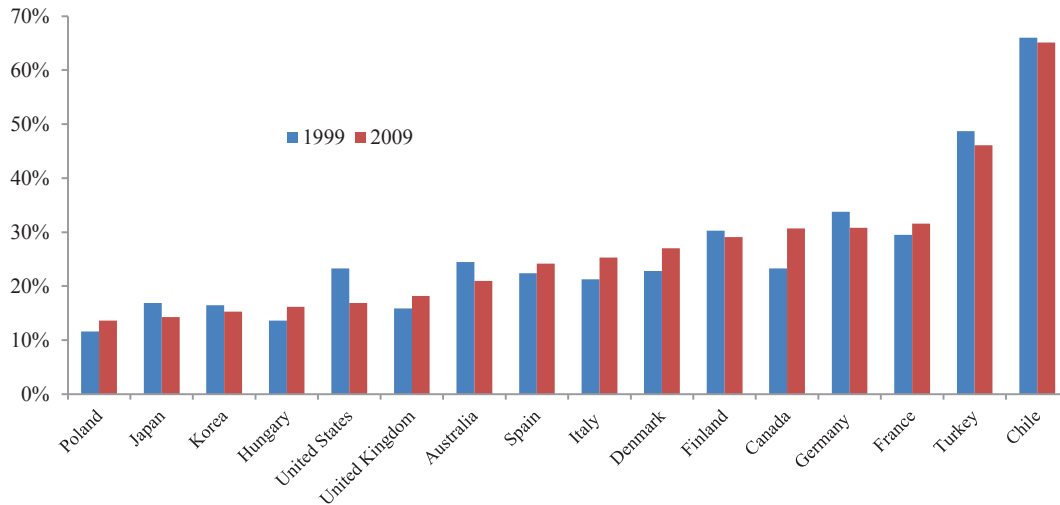


Source: IMF WEO.

3.5. **Turkey has a relatively large share of investment in housing.** Although residential building may have a favorable labor-capital ratio, its capital-output ratio is unfavorable in comparison with many other investments. In 2009, dwellings accounted for about 46 percent of investment, one of the highest levels in the OECD. Moreover, there have been no significant changes over the last decade, with

dwellings accounting for about 49 percent of investment in 1999. While investments in dwellings, including housing, provide an important social function, Turkey will make greater progress by concentrating on capital outlays yielding a more rapid and productive flow of returns.

Figure 3.2. Dwellings as a Share of Total Investments in OECD Countries¹

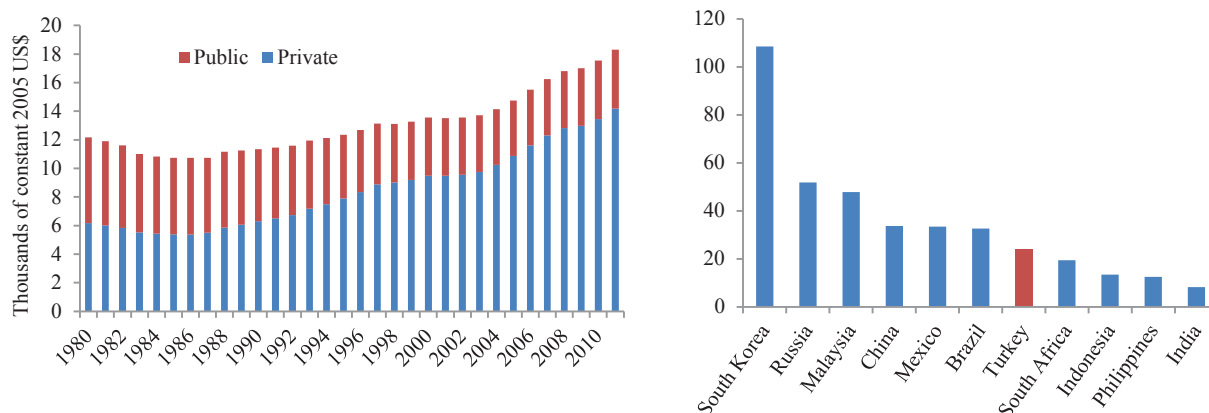


Source: OECD.

3.6. **Turkey’s per capita capital stock is lower than most of its peers’ due to a relatively subdued investment to GDP ratio.** In 2011, the capital stock in Turkey is estimated to be around 24 thousand constant 2005 USD per capita, which is about 20 percent higher than levels in 1980. An increase in the capital stock was mainly due to an increase in private capital stock levels while deregulation and privatization resulted in lower public investment levels. Given a relatively low investment to GDP ratio by emerging market standards, Turkey’s per capita capital stock lags behind its peers. For example, the capital stock per capita in China is estimated to be almost 40 percent higher than in Turkey. Relative to high income countries, the gap is even larger. For example, in 2011 the capital stock per capita in Korea was almost four times larger than in Turkey. The main implication is that while the current capital stock does not appear to be a binding constraint to economic growth, continued high investment rates are needed to bridge the gap with higher income countries. However, at the same time, a shift in the composition away from dwellings and towards plant and equipment will also be needed.

¹ Please note that OECD data used for the country comparisons is different from the MoD data used for time series analysis.

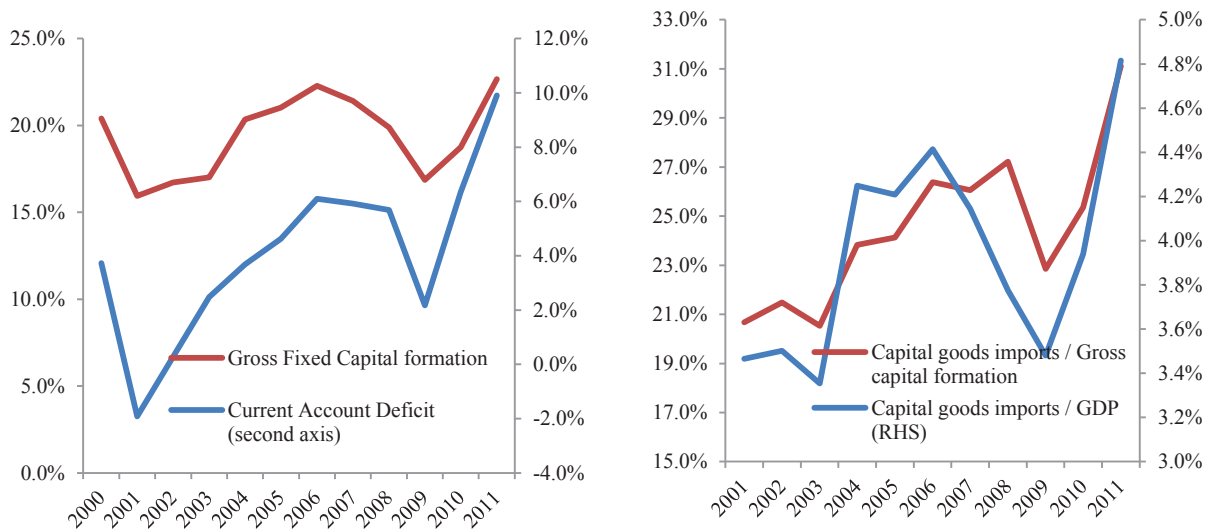
Figure 3.3. Capital Stock per Capita in Turkey and Comparator Countries (2011)



Source: World Bank staff estimates, Penn World Tables.

3.7. **With declining public investment over the last two decades the increase in Turkey’s capital stock was mainly due to an increase in private investment financed with external savings.** External financing did not necessarily pay for imports of capital goods, but rather finance a general widening of the current account deficit. In the period between 2002 and 2006, a period characterized by favorable external conditions, gross capital formation increased from 16.7 percent of GDP to about 22.5 percent. Over the same period the share of capital goods in GDP increased to from just 3.5 percent to 4.4 percent. Moreover, in the post-2008 crisis environment which was characterized by loose global liquidity conditions, the share capital goods imports only grew to 4.8 percent of GDP. It is also noteworthy that energy imports are about 7 percent of GDP, but it remains an open question as to how much this is related to capital depending or consumption.

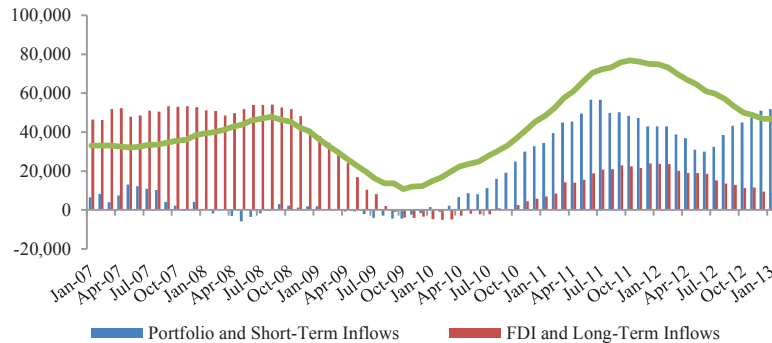
Figure 3.4. Current Account Deficit and Investment Rates (percent of GDP)



Source: Ministry of Development.

3.8. **The structure of the current account deficit financing has deteriorated in recent years.** Prior to the global economic crisis Turkey's current account deficit was financed mainly by foreign direct investment and other long-term capital inflows. In recent years, portfolio and short-term capital inflows have dominated long-term capital flows. Such change in composition increases risks of capital reversals and also worsens the composition of investments as short-term capital flows tend to finance investments that are not associated with technology transfers. There is thus arguably a link between the structure of financing and the bias in the composition of investment towards housing and construction.

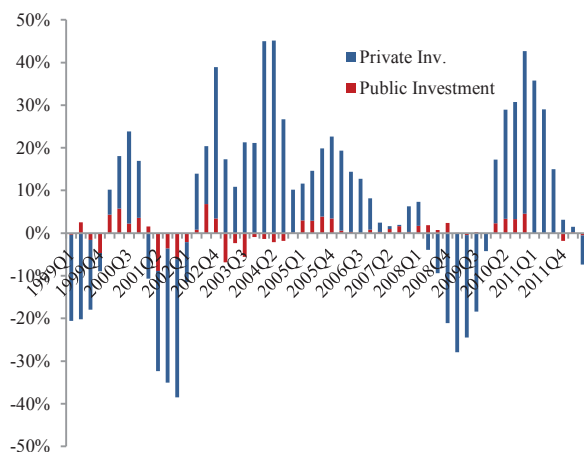
Figure 3.5. Current Account Deficit and Capital Inflows (thousands of US dollars)



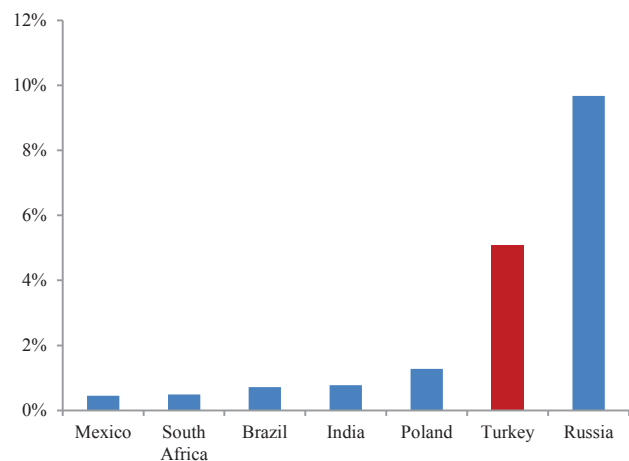
Source: Central Bank of Turkey.

3.9. **Heavy reliance on external financing contributed to an increase in investment volatility.** On average, over the last decade, the volatility of the investment rate in Turkey is significantly higher than in benchmark countries. Of all benchmark countries only in Russia, a natural resource rich country, have investment rates been more volatile than in Turkey. Quarterly investment growth rates in Turkey indicate that private investment contributed to the investment volatility. High investment volatility is also common in other countries that are dependent on external savings. Volatility in the investment rate has contributed to the volatility of growth. The contribution of the capital stock to growth is higher than in Brazil, Mexico and South Africa, but the contribution of productivity is significantly lower than in comparator countries. High contribution of capital stock, in combination of volatile investment rate, has contributed to Turkey's growth volatility observed over the last decade.

Figure 3.6. Volatile Investment Growth Rates

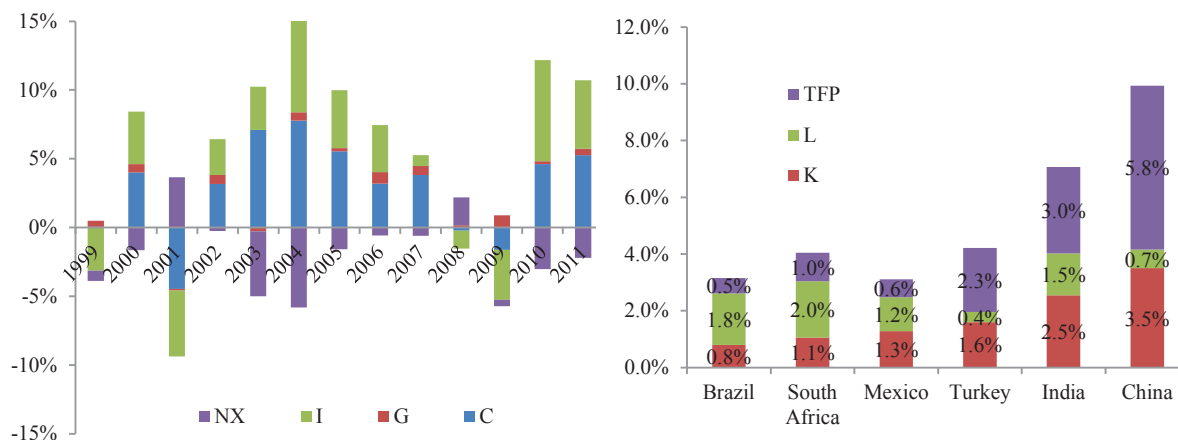


Source: World Bank staff calculations based on data from the Ministry of Development. Note: Quarterly year-on-year growth rates.



Source: WEO. Note: Variance in annual real investment changes 2000-2011.

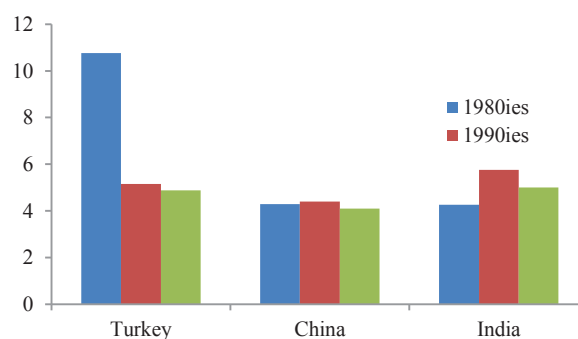
Figure 3.7. Turkey: Sources of Growth Demand



Source: Penn World Tables, World Bank Staff estimates.

3.10. While the efficiency of investment has increased since the 1980s, it is not much higher than in peer countries. Turkey's incremental capital output ratio (ICOR) has improved significantly over the last decades, indicating a more efficient allocation of capital. The levels are comparable to those in China and India and are higher than in developed countries. However, even with the current ICOR, to maintain a medium term growth rate of 5 percent would require to an investment rate of about 24 percent of GDP, slightly more than the current levels. Given low savings rate, maintaining such investment rate will result in unsustainably high current account deficits over the medium-term. In the absence of higher domestic savings, further improvements in the domestic allocation of capital will be needed for Turkey to grow at rates commensurate with the government's medium-term aspirations.

Figure 3.8. Incremental Capital Output Ratio in Turkey, India and China



Source: World Bank Staff estimates.

C. PUBLIC AND PRIVATE INVESTMENT: IS THERE A RELATIONSHIP?

3.11. Fiscal policy continues to play an important role in supporting investment growth. Public investment has been an important tool to promote competitiveness, regional development and economic growth. Additionally, it remains an important vehicle in providing core infrastructure and is often a precondition for private investment. Tax policy also supports investment growth through the incentives it provides for the private sector (Box 3.1). This section will focus on how public investment, budget and off-budget, affects overall investment levels and to what extent fiscal policy influences incentives for the private sector to accumulate capital.

Box 3.1. The New Incentive Scheme

In April 2012, the Ministry of Economy introduced a new investment incentive package with the following objectives:

- Reducing the current account deficit by supporting the production of intermediary goods and products that have high import shares
- Supporting Cluster formation
- Increasing the investment incentives targeting least developed regions
- Reducing regional development disparities
- Increasing the efficiency of the incentive measures
- Supporting investments with high and medium-high technology in order to ensure technological transformation

While first two objectives are new, the last four objectives are same as the previous incentive scheme introduced in 2009. The new scheme maintains all three components of the previous scheme (general incentives, regional incentives, large-scale investment incentives) and adds a fourth pillar on “strategic investment incentives”. The new scheme also changes the classification of regions for the purposes of the incentives. While it redefines six regions based on an updated socio-economic development index, it also moves to a province-level regional development incentive scheme.

Instruments.

The various instruments, some of which are new, are organized by component.

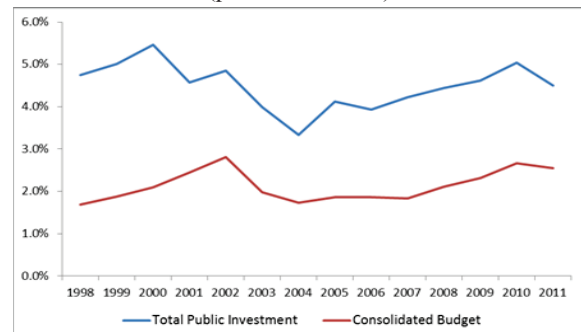
- Large-scale investments will receive VAT exemption, customs duty exemption, tax reduction, support for employer’s social security contribution and land allocation.
- Regional investment incentives will, in addition to these incentives, qualify for support of interest payments, while strategic investments may also get VAT rebate.
- Furthermore, if undertaken in the least-developed region six, investments may also receive support for income tax withholding and employee’s social security premium for up to 10 years.
- Organized industrial zones will qualify for longer periods of support while regional incentives will continue to be progressive by the level of development of regions.
- Interest subsidy will be between 3-7pp and up to TL 900,000.

Implications

- With the new system, the tax reduction could reach up to 60 percent of the investment amount, subject to a 90 percent tax reduction for investments starting in 2013.
- The total intensity of investment support will vary between 27-116 percent of the investment amount.
- Region six will have the lowest labor cost, as the total subsidies will reach 38% of the gross minimum wage in this region.
- A new feature of the system is that firms investing in one region but also operating in another region will be able to deduct taxes for their operations in these other regions up to 80 percent of the total tax reduction.

3.12. **Public investment growth is significantly lower than observed in previous decades.** In the 1970s, the public sector’s share in total investment hovered around 40 percent with an average growth rate of public investment reaching almost 10 percent. This period was characterized by an import substitution industrialization strategy with an ambitious public investment program aiming to increase domestic production of heavy manufacturing and capital goods. In the late 1980s, the growth rate of public investments shrank to an average of 1.6 percent due to the liberalization process. The deceleration in public investments continued after the

Figure 3.9. Public Investment (percent of GDP)



Source: World Bank staff estimates.

2001 crisis in line with the IMF program. Public investment declined from 10 percent of GDP in 1970s to 7 percent of GDP in late 1980s and finally averaged 4 percent of GDP in the last decade. After the conclusion of the standby agreement in 2006, public investment started to increase again (Figure 3.10). However, quasi-fiscal entities' investments and investments through public private partnerships (PPPs), which are not reported under total public investments, increased rapidly in the same period and the amount of the PPPs that needs to be financed annually stands at 1.3 percent of GDP.

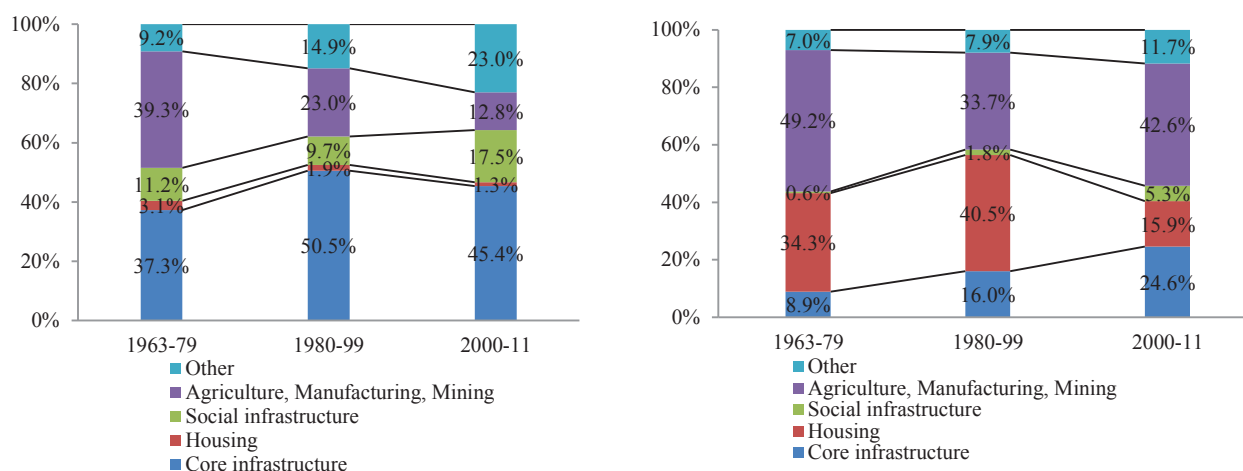
3.13. The share of public investment in total investment fell in industry and agriculture, while private investment saw a significant increase in core infrastructure. The share of the agricultural and industrial sectors in total public investment eased considerably in the last 20 years as a result of privatization in the these sectors. Importantly, the public sector started to concentrate more on social and core infrastructure areas in the last decade despite a fall in investments in the communication sector after the sale of Turk Telekom (privatized in 2005) (Figure 3.11). The private sector successfully compensated the slowdown in public investments in the related areas with investment in agriculture, mining and manufacturing averaging 7.3 percent of GDP in the last decade compared to 4.9 percent between 1990 and 2000.

Table 3.1. Turkey: Public Investment and GDP Growth
(percent)

	1963-79	1980-99	2000-11
Real GDP growth	5.1	4.2	4.3
Real investment growth			
Private	7.0	6.1	8.3
Public	9.7	1.6	1.3
of which core infrastructure	10.8	2.7	0.9
of which other	9.0	0.8	1.7

Source: World Bank staff estimates.

Figure 3.10. Turkey: Compositions of Public (LHS) and Private Investment (RHS)



Source: Ministry of Development.

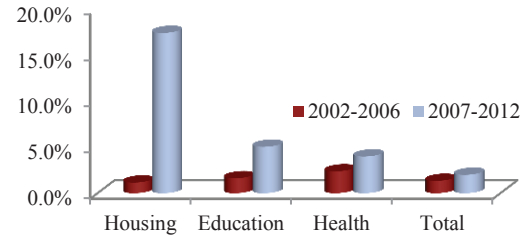
3.14. Government policies have recently aimed at improving social infrastructure (education, health) in lagging regions. While public investments remained largely stable in the last decade, the regional distribution changed significantly with lagging regions' share in total public investment increasing especially in the social sectors. For instance, the average share of Northeastern Anatolia (the least developed region in the country) in total investments almost doubled in the last 5 years compared to the previous 5 year period on the back of increasing investments in health, education and housing sectors. Reallocation of public spending toward underdeveloped regions has been an important driver of the

improved social conditions across the country. For example, in Northeastern Anatolia, these policies were successful as the utilization of healthcare services in the region almost tripled in the last decade.²

3.15. In principle, public investment can either crowd out or crowd in private investment.

Crowding out can occur in economies operating at full employment and when public investment financed by taxes or domestic borrowing uses scarce resources that could have otherwise been available for private investment. Alternatively, increased government spending financed through borrowing from the domestic banking system can lead to a reduction in the availability of credit for the private sector and/or an increase in domestic interest rates, which discourages private investment. Also, restrictive laws or regulations may effectively reserve some sectors for public investment, where private investment could have been more productive.

Figure 3.11. Northeastern Anatolia's Share in Public Investments



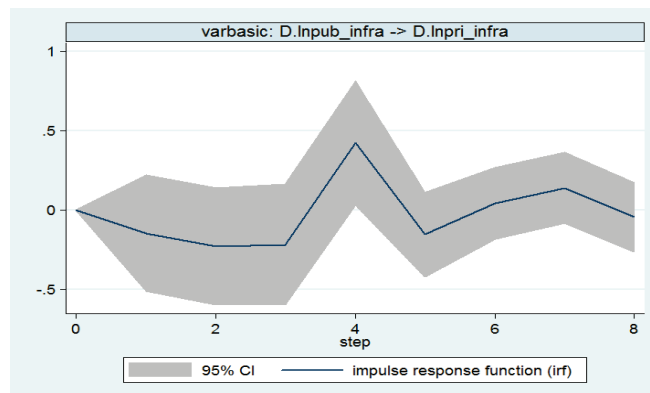
Source: Ministry of Development.

3.16. In contrast, *crowding in* is when public investment has positive externalities for private investment. Public investment can improve the investment environment and reduce production costs for the private sector by providing improved physical infrastructure (e.g., transportation and communication networks, power and other public utilities), or by helping improve the quality and supply of the labor force (e.g. through the provision of health and education services, worker training programs, etc.). We develop an empirical test to assess the extent to which Turkey’s public investment has been associated with such crowding out or crowding in effects. The test is based on the estimation of a structural vector autoregressive (SVAR) model of public investment, private investment and GDP dynamics (see Annex II). Granger-causality statistics are used to examine whether lagged values of one variable help to predict another variable in the system. In addition, impulse responses are calculated to trace out the response of current and future values of each variable to a one percentage point unexpected increase in the current value of public investment. The values of private investment are estimated using the recursive VAR system with the coefficients estimated from historical data.

3.17. The increasing concentration of public investment in core infrastructure has had a positive impact on private investment growth.

There is evidence that public investment in core infrastructure, defined as energy, transportation and communications, *crowds in* private investment. The estimated impulse responses show that an unexpected rise in public infrastructure investment at year 0 has no effect (or a slight crowding out) in the short run on private infrastructure investment, but in year 3 and year 4, private infrastructure investment rises by 0.5 percent, suggesting a medium term crowding in effect. This result is consistent with similar estimates in other countries that show that in the short-term

Figure 3.12. Turkey: Accumulated Response of Private Investment to a Public Investment Shock



Source: World Bank staff calculations based VAR, annual data for 1963-2011.

² Per Capita Visits to a Physician in Health Care Facilities, Ministry of Health, Health Statistics Yearbook 2011.

there is evidence of crowding-out while in the medium-term to long-term public investment may compliment private investment (Mitra 2006). It is also consistent with the dynamics of public debt reduction, which have created fiscal space for social spending as well as reduced the risk of *crowding out*.

3.18. **The evidence presented suggests public investment can have a positive impact on long-term growth by complimenting private investment growth.** This finding has important policy implications. Although public investment supports growth in the short-run regardless of its composition, the composition of public investment matters more for the long-run relationship between fiscal policy and economic growth. Modifications in the composition of public investment could contribute to a more domestically financed growth model in the medium term by complimenting increases in private investment. In other words, public investment in more productive sectors will not only help boost growth in the short-term but also it will crowd-in private investment in the medium term which will be translated into higher domestic income and savings in subsequent periods; and ensure stronger and sustainable growth prospects.

D. POLICY SIMULATIONS: FISCAL POLICY FOR INVESTMENT AND GROWTH

Scenario I. Improving the Composition of Investment

3.19. **Next we analyze specific fiscal policy measures that could be introduced by the authorities to stimulate a better composition of capital accumulation.** As indicated in the previous section, the overall business environment is one of the most important factors that determine the level of capital accumulation by the private sector. A complementary fiscal policy measure to support investment growth is making adjustments in tax policy. High taxes on labor are an impediment not only to employment growth, but also suppress overall economic activity. At the same time, taxes on capital have remained relatively low. A combination of low taxes on capital and high taxes on labor has contributed to distortions in the allocation of private investment. The current structure of the tax system results in a relatively high share of investment allocated to non-tradable sectors, while some employment intensive sectors, especially manufacturing, are at a relative disadvantage.

3.20. **A shift in the tax burden from labor to capital would not only promote growth in formal employment, but also will increase economic activity through a higher level and better composition of investment.** We analyze a fiscal revenue neutral change in the composition of the tax burden from labor to capital. Specifically, a 10 percent reduction in the direct tax rate on labor (personal income tax) in 2014 is offset by a proportional increase in indirect taxes on housing assets. The results indicate that such a fiscal revenue neutral change in the composition of taxes will result in an increase in the annual investment rate by 0.52 percentage points of GDP (Table 3.2). A shift in the tax burden from labor to capital would also result in changes in the composition of investment. Proposed policy changes will increase the investment rate in all major economic categories of investment, including manufacturing, infrastructure and construction however, the investment structure will change. The investment share in core infrastructure and manufacturing is expected to increase, while that in housing would decrease by 1.2 percentage points. This change would encourage a more sustainable growth path, with real GDP growth averaging 3 to 3.5 percent in the medium-to-long term.

Table 3.2. Turkey: A Property Tax Increase

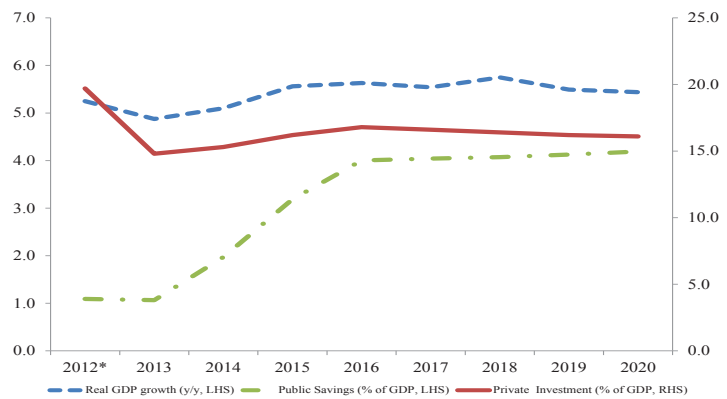
	Percentage Point Changes
Investment rate	0.52
Capital use	
Manufacturing	0.2
Housing	-1.2
Infrastructure	0.2
Construction	1.0

Source: Bank staff calculations based on simulation results.

Scenario II. Increasing Public Savings

3.21. **Building on the scenarios presented above, this simulation looks at the impacts of raising public savings.** This scenario can be thought of as trying to capture two possible changes in public policy. The first is that public saving takes up the mantle of raising national saving in the event that private saving does not pick up as expected. We consider a scenario where public saving is increased by 2 percentage points of GDP relative to the recent historical average of 2 percent. The increase in public saving comes from an increase in capital income tax revenues. The second policy change is that we assume additional public saving is spent on increased public investment and thus the composition of expenditures changes away from recurrent expenditures. This does not imply an actual reduction in recurrent spending but can be thought of as a significant slowdown in their rate of growth for the benefit of a faster increase in public investment spending.

Figure 3.13. Public Savings and Economic Growth



Source: Bank staff calculations based on simulation results.

3.22. **Raising public savings can help to sustain growth.** Another important illustration in this scenario is that an increase in public savings will be necessary in a low growth environment where private savings do not increase significantly (see chapter 2) if more domestically financed growth is to be realized. The increase in public savings raises national savings and national investment rises correspondingly. This domestically financed investment increase results in sustained real GDP growth at 5.4 percent through to the end of the projection period. We assume that public investment is in core infrastructure and crowds in private investment as per the results of the VAR analysis above. The current account deficit is sustained at just below 6 percent of GDP. Critical to the results is that government spending on core infrastructure is in high return projects. In this regard, the result may be considered an upper bound estimate given the inevitable inefficiencies that can creep into public investment.³ The key to realizing a significant growth impact is to improve the institutional and regulatory environment for public investment.

Scenario III: The limits of Investment Led Growth

3.23. **The analysis here suggests that a key policy issue for government is how to sustainably finance Turkey's investment needs.** A more domestically financed growth model requires higher domestic savings to finance investment rates going forward. Larger reliance on domestic sources to finance investment would greatly reduce not only the volatility of investment. It would also help change its structure by reducing reliance on short-term foreign debt flows that tend to finance construction, housing and retail sectors. Returning to the high growth and higher national savings scenario presented in Chapter 2 we can focus more closely on investment. In this scenario we estimate what investment levels are needed to maintain a medium-term growth rate of 6 percent per year, while maintaining a current account deficit of 6 percent of GDP or less. This is a more domestically financed growth model and

³ Although, the strong increase in the economic growth rate in this scenario is also driven by the complementary employment gains in the higher investment environment.

requires investment rates that are 3 percentage points of GDP higher than current levels. It also requires rates of growth in employment and total factor productivity that are significantly higher than observed in the past decade.

Table 3.3. Turkey: Growth Accounting - Various Scenar

	Real GDP						
	Growth	Capital	Labor	TFP	Capital	Labor	TFP
		<i>Contributions</i>			<i>Changes</i>		
History (1999-2007)	4.3	1.6	0.4	2.3	4.9	0.5	3.3
Investment led Growth	6.0	3.5	0.9	1.4	5.1	3.1	2.0
Job rich Growth (I)	6.0	1.5	1.8	2.5	2.2	6.1	4.0
Job rich Growth (II)	6.0	3.0	1.7	1.2	4.3	5.7	2.0

Source: Bank staff calculations based on simulation results.

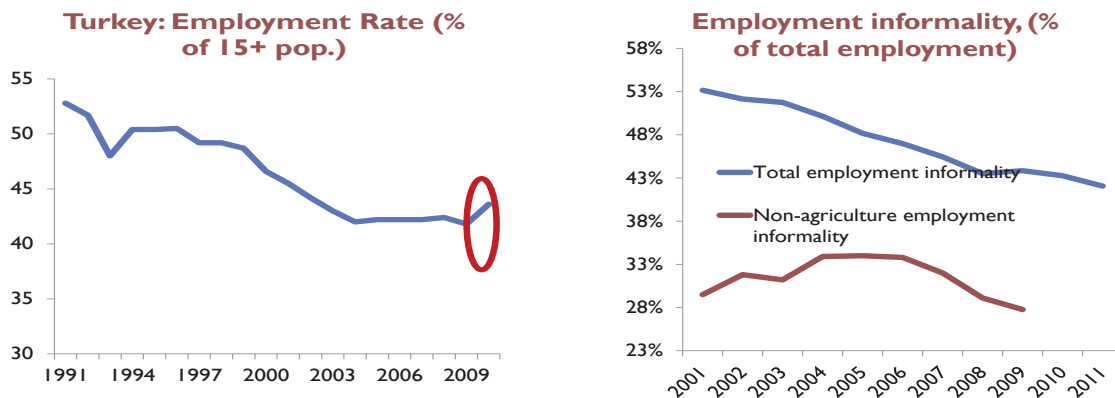
3.24. **At current levels of employment growth and TFP growth, investment would need to rise by an additional 6 percentage points of GDP.** This investment-led growth would be incompatible with sustaining a CAD of 6 percent of GDP as national savings would simply not rise by enough to cover the additional investment. The main implication is that employment growth and TFP growth considerably above historical rates are needed for faster and sustainable growth. Key to making this happen will be getting females and youth to work and making effective use of the ongoing demographic dividend. It also implies improving the skills of working-age adults and investing in the education system in order to raise the skill profiles. There is a broad policy agenda to support employment and TFP growth that goes beyond on the scope of this analysis, but the next chapter does focus on policy options for enhancing employment rates in the country, especially female employment.

Chapter 4. Public Policy for Productive Employment

A. INTRODUCTION

4.1. **The recent performance of Turkey's labor market has been remarkable.** Despite being hard hit by the 2008/9 global financial crisis when the unemployment rate shot up to 16 percent, the recovery has been quick and strong, and unemployment has fallen below pre-crisis levels. The employment rate is now at 46 percent, a level not seen since before the 2001 crisis.¹ Post-crisis increases in the labor force participation and employment rate of females were important drivers of this recovery. This turn in the labor market is in contrast to longer-term structural developments in employment in Turkey. Turkey's employment rate is still the lowest among OECD countries, and it is particularly low among women and youth. The objective of this chapter is to consider the policy changes that might support a higher rate of formal employment, especially among females and youth, while also shedding some light on the recent impressive employment rates.

Figure 4.1. Turkey: Features of the Labor Market



Source: TurkStat.

4.2. **Job informality in Turkey has been decreasing, but remains a key concern for government.** Job informality among workers aged 15 and above has declined over the last decade, but it still affected 38 percent of workers in 2012 (Figure 4.1).² Agriculture in Turkey remains predominantly informal with 84 percent of workers employed informally. Prior to the 2009 crisis, the processes of urbanization and agricultural shedding were the main drivers of the decline in job informality. From 2007, agricultural shedding slowed and even reversed in 2011, implying that the most recent declines in informality were due to both decreases in agricultural informality and declines in non-agricultural informality (Figure 4.1). Nevertheless, 28 percent of those employed in non-agricultural activities remained informal in 2011. There are two trends that we will investigate in this chapter. The first is that from the early 2000s while the employment rate basically flat lined, there was a significant compositional change from informal to formal work as employment in agriculture fell. Since the 2009 crisis there has both been a continued transition into formal work and it has been accompanied by a significant jump in the employment rate.

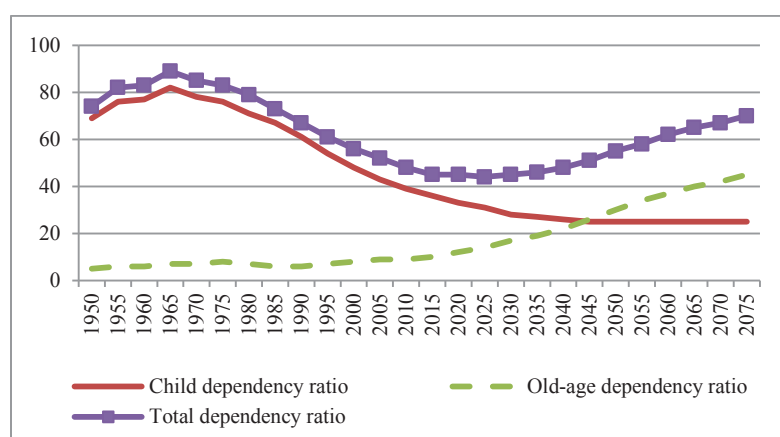
¹ Turkstat data as of October 2012.

² Job informality is defined here as employment without registration with any social security institution.

4.3. **Ongoing demographic changes present both a huge opportunity and urgent policy challenge.** Turkey’s working-age population continues to grow implying that the number of people looking for non-agricultural jobs will increase in the next few decades. While younger cohorts are increasingly better educated, the majority of the labor force will remain low-skilled for a while into the future, given the current education profile of the working-age population. Thus, there may be an increasing mismatch between the skills demanded by progressively more sophisticated employers and those offered by the bulk of the labor force. To reap the potential ‘demographic dividend’ policy makers must ensure new labor force entrants are matched with “good jobs” (Grun et al. 2014). In this respect, a wide range of policy options can be considered, from improving the investment climate to improving vocational training to take two examples. This focus here is on how fiscal policy can help and we draw on the government’s recent policy experience for guidance.

4.4. **Fiscal policy can help ensure that the labor markets in Turkey do not become a constraint to the country’s growth potential.** Activation of working-age women, promotion of formal employment, and protection of workers experiencing income shocks have already been identified as priorities by the government. Fiscal policies can help to provide the right incentives and support to achieve these objectives. The next section reviews the recent labor market trends as well as the structural forces shaping the jobs

Figure 4.2. A Closing Demographic Window



Source: Turkstat.

challenge in Turkey. Section III assesses the extent to which the current policy environment promotes the stated government objectives of higher formal employment. Finally, Section IV presents the results of CGE model simulations, assessing several policy options that can help Turkey take full advantage of its demographic dividend and increase the contribution of labor to Turkey’s growth potential.

4.5. **The main messages of this chapter are the following:**

- a. **High minimum wages in Turkey contribute to labor market segmentation and income inequality.** Minimum wages are high relative to median wages, and have increased dramatically over the last decade. Minimum wages at 71 percent of median wages are the highest in relative terms in the OECD.
- b. **High labor tax wedge may be affecting labor supply.** The labor tax wedge in Turkey is high relative to the OECD and other fast growing emerging markets. Recent estimates put the labor tax wedge of a single earner household (married with two children) at 38 percent, well above the OECD (unweighted) average of 27.3 percent.
- c. **Reducing the minimum wage and the high labor tax wedge would help increase rates of employment formality, especially among female and youth segments of the labor market.** We find that the targeted portion of the government’s 2008 measures to reduce social contributions can explain about 15 percent of the actual increase in employment observed in 2010. This implies that other perhaps more structural factors are at work. But, the

simulated impacts of a combined reduction in social contributions and a 25 percent reduction in the minimum wage from current levels show strong increases in formality rates.

- d. **An increase in the female labor force participation rate supports significantly higher growth.** An exogenous increase in the female participation rate to 80 percent of the current male participation rate would help spur real GDP growth from 2.2 percent in 2012 to about 4.8 percent over the medium-term. Moreover, the higher female labor force participation rate supports less volatile economic growth as it is equivalent to a positive supply shock without increasing investment requirements³.

B. RECENT LABOR MARKET TRENDS AND THE STRUCTURAL JOBS CHALLENGE

4.6. **Turkey's labor market made a strong recovery from the effects of the global financial crisis.** Real GDP growth fell from the pre-crisis average annual rate of about 5 percent to a negative 8 percent in Q4 2008-Q3 2009, implying a crisis impact of 13 percentage points. The overall impact of the crisis on the labor market was relatively short-lived and mostly expressed itself in a higher unemployment rate, which rose from about 10 percent before the crisis to almost 14 percent during the crisis (peaking at 16 percent in February 2009). The higher unemployment rate was a product of longer unemployment duration as well as job losses in the formal sector. The informal sector served as a cushion during the crisis, absorbing the laid off from the formal sector. However, earnings in the informal sector declined significantly relative to the pre-crisis trend by 4.5 percentage points. Earnings in the formal sector were up 3.3 percentage points relative to the pre-crisis trend driven by a significant rise in the real minimum wage between 2008 and 2009.⁴ After the crisis, economic growth and employment rates quickly rebounded, easily surpassing their pre-crisis levels. The unemployment rate was below 10.0 percent for all of 2013 and back to its pre-crisis level.⁵

Table 4.1. Crisis Impacts and Recovery: Leading Labor Market Indicators

	Quarterly Data				Monthly Data					
	Both Male and Female				Males		Females			
	GDP	LFPR	ER	UR	LFPR	ER	UR	LFPR	ER	UR
Levels										
Pre-crisis (Jan. 05–Sept. 08)		46.43	41.62	10.37	70.06	62.98	10.12	23.71	21.09	11.07
Crisis (Oct. 08–Sept. 09)		47.59	41.02	13.86	70.44	60.78	13.73	25.58	21.95	14.22
Post-crisis (Oct. 09–Oct. 12)		49.39	44.18	10.58	71.11	63.97	10.05	28.41	25.05	11.85
Latest (Oct. 12)		51.00	46.40	9.10	71.90	66.20	7.90	30.70	27.20	11.60
Changes (year-on-year)										
Pre-crisis (Jan. 06–Sept. 08)	5.2	0.00	0.04	-0.05	-0.25	-0.16	-0.09	0.23	0.20	0.02
Crisis (Oct. 08–Sept. 09)	-8.1	1.15	-0.59	3.41	0.61	-1.96	3.56	1.64	0.70	3.03
Post-crisis (Oct. 09–Oct. 12)	7.7	0.70	1.36	-1.52	0.17	1.34	-1.68	1.16	1.35	-1.18
Outcomes										
Crisis impact	-13.3	1.15	-0.63	3.46	0.86	-1.80	3.65	1.41	0.50	3.00
Degree of recovery	1.15	1.10	1.11	0.88	1.03	1.05	0.78	1.29	1.29	1.05

Source: Author's calculations based on Turkstat data and World Bank (forthcoming). Latest post-crisis data is July 2012. Impacts are in percentage points; degree of recovery is ratio of latest quarter to pre-crisis average level.

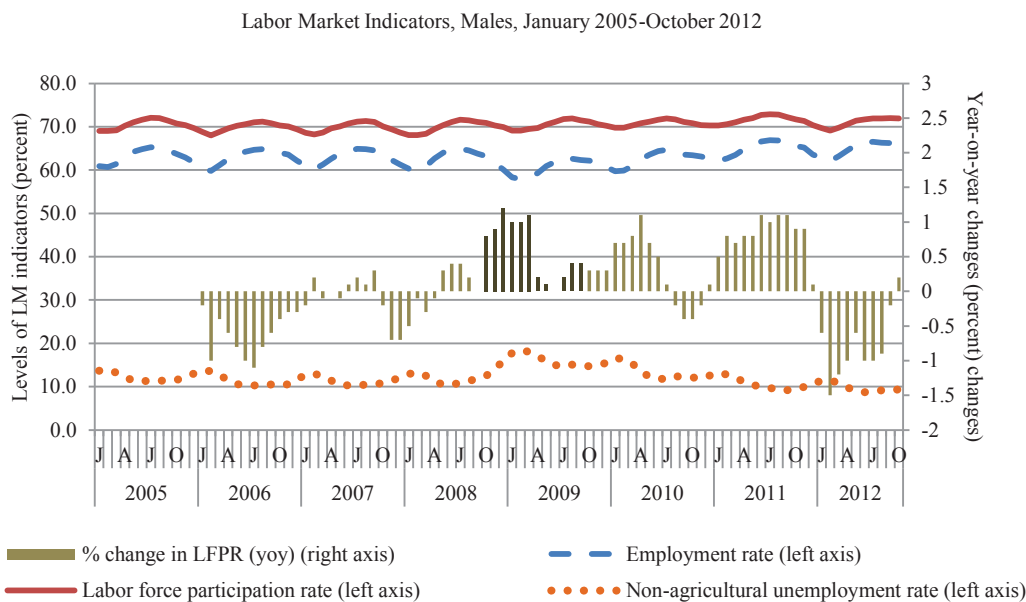
³ In practice, employment creation to absorb additional female labor force entrants would require increased investment, but labor market policies could affect the amount of investment needed for each formal sector job.

⁴ Baltagi et al. (2012)'s finding of informal workers' wages higher responsiveness to regional unemployment rates explains this dynamic of job losses in the formal sector driving down earnings in the informal sector.

⁵ World Bank (2013). "Turkey: Managing labor markets through the economic cycle." Report No. 70130-TR.

3.1. **Female labor force participation may be undergoing a potential shift in trend.** Female labor force participation increased sharply during the 2008/9 crisis. The phenomenon of the “added worker effect” is often observed during crises, when secondary workers (usually women) enter the labor market to mitigate the decline in household incomes due to either job loss or decrease in earnings of primary breadwinners.⁶ However, unlike the cyclical spike predicted by the added-worker effect, the flow of women into the labor force has continued long after the crisis (Figure 3.3). Female labor force participation was up to 30.7 percent by October 2012, almost 30 percent higher than the pre-crisis average and approaching the 34 percent labor force participation rate of 1988.⁷ This suggests that there might be a structural shift in female labor force participation rate. While it is difficult to identify the precise causes of this shift, the packages of measures targeted to encourage female employment during the crisis and the 2008 reduction in payroll taxes that gave special emphasis to females and youth could have helped to support this trend (see section III).

Figure 4.3a. Male Labor Force Participation and Employment Rate



Source: Author’s calculations based on Turkstat data.

4.7. **The informal sector continued its downward trend after the crisis.** The informal sector temporarily increased during the crisis, but resumed its trend decline as the economy recovered. Informality affects women disproportionately: 58 percent of employed women work informally compared to 36 percent of men with the main gender differences being in agriculture and in non-agricultural self-employment. While the level of non-agricultural informality in Turkey is about where it should be for its level of development, it contributes to relatively low labor productivity, which in 2011 is about 47 percent of the productivity level in the US, similar to Poland and South Korea but far below the OECD average.⁸

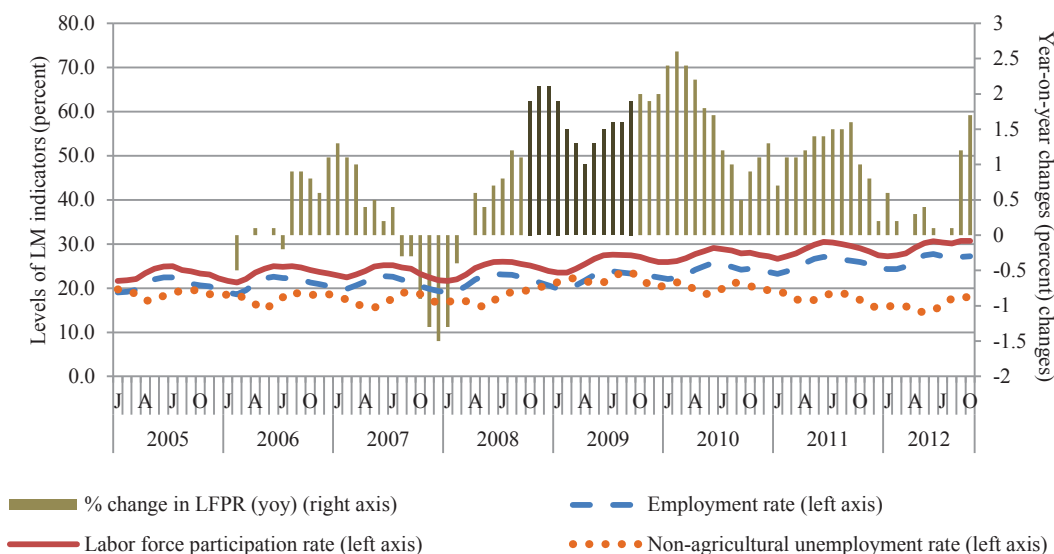
⁶ Karaoglan and Okten (2012) have examined the labor force participation of married women in Turkey during the 2000-2010 period, and found an added-worker effect for wives whose husbands are unemployed or underemployed.

⁷ State Planning Organization (SPO) and World Bank (2009). “Female Labor Force Participation in Turkey: Trends, Determinants and Policy Framework.” Report No. 48508-TR.

⁸ There is a significant wage gap between informal and formal workers even after controlling for their characteristics. These differences are likely to be caused, at least in part, by productivity differentials between these

Figure 4.3b. Female Labor Force Participation and Employment Rate

Labor Market Indicators, Females, January 2005-October 2012



Source: Author's calculations based on Turkstat data.

4.8. **The Turkish labor markets remain considerably segmented, contributing to higher income inequality.** Barriers to entry into formal jobs imply that some workers are being rationed into higher-paying formal jobs with access to job protection and social insurance benefits, while others (potentially with similar characteristics) are forced to take up lower-paying unprotected jobs in the informal sector. Başkaya and Hülügü (2011) use propensity score matching method to confirm the existence of a formal wage premium of 10-23 percent among workers with similar observable characteristics, and they find that women and young workers are more affected by this formal wage premium than males and older workers. Since women and younger workers are more likely to be in the lower part of the earnings distribution, this segmentation exacerbates income inequality in Turkey.

Table 4.2. Informality in Turkey Has Come Down Dramatically but Remains High
(percent)

	Total	Agriculture	Non-agriculture				
			Total	Employees	Employer	Self-employed	Unpaid workers
2004	50.1	90	34	29.9	18	47	83
2005	48.2	88	34	29.8	21	51	80
2006	47.0	88	34	29.4	23	52	81
2007	45.4	88	32	27.4	25	53	84
2008	43.5	88	30	24.2	24	55	82
2009	43.8	86	30	23.9	24	59	75
2010	43.3	85	29	23.3	22	59	77
2011	42.1	84	28	22.6	19	57	76

Source: Author's calculations based on Turkstat data.

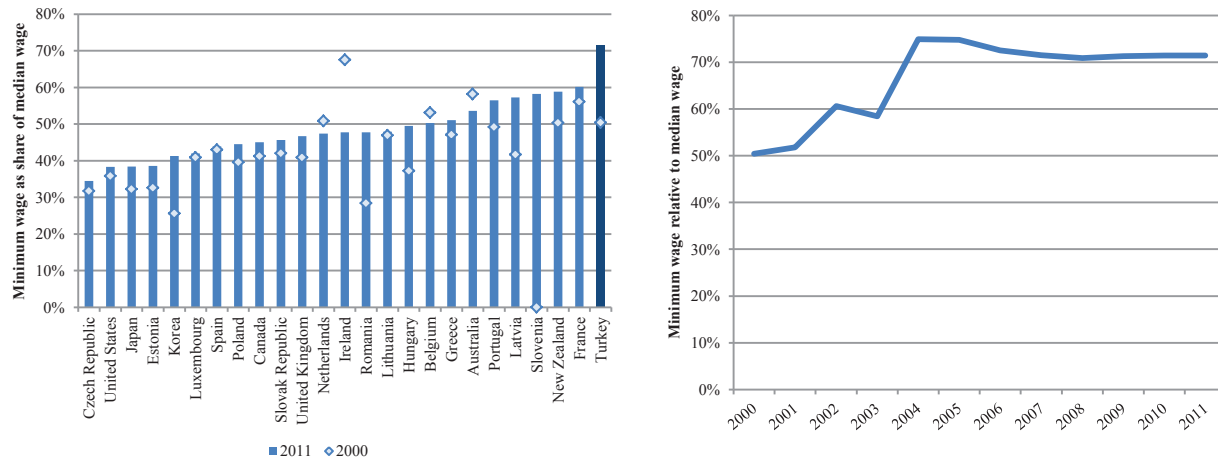
sectors. There are also large differences in total factor productivity (TFP) between formal and informal firms even after controlling for firms' and entrepreneurs' characteristics (World Bank 2009a).

C. KEY POLICIES AFFECTING LABOR MARKET OUTCOMES

A Binding Minimum Wage

4.9. **High minimum wages in Turkey contribute to market segmentation and income inequality.** Minimum wages are high relative to median wages, and have increased dramatically over the last decade. Minimum wages at 71 percent of median wages are the highest in relative terms in OECD (Figure 4.4). Moreover, this ratio has risen from 50.4 percent in 2000.⁹ Increases in the minimum wage can affect average earnings, both directly (increased earnings for minimum wage earners) and indirectly (by anchoring all wages at a higher new level). There is a rich literature showing that high minimum wages can discourage (formal) employment (e.g. Abowd et al. 1999 in France, or Maloney and Mendez 2004 in Colombia), while others find no such effect in (Card and Krueger 1994).¹⁰ The evidence for Turkey is less ambiguous and does suggest an impact on formal employment. Minimum wages were raised by an additional 2.6 percent during the 2008/9 crisis, increasing the growth rate of formal earnings above the pre-crisis trend. Informal earnings in contrast fell, as both wages and hours were cut.

Figure 4.4. Minimum-to-median wages: Turkey and OECD



Source: Turkstat and OECD.

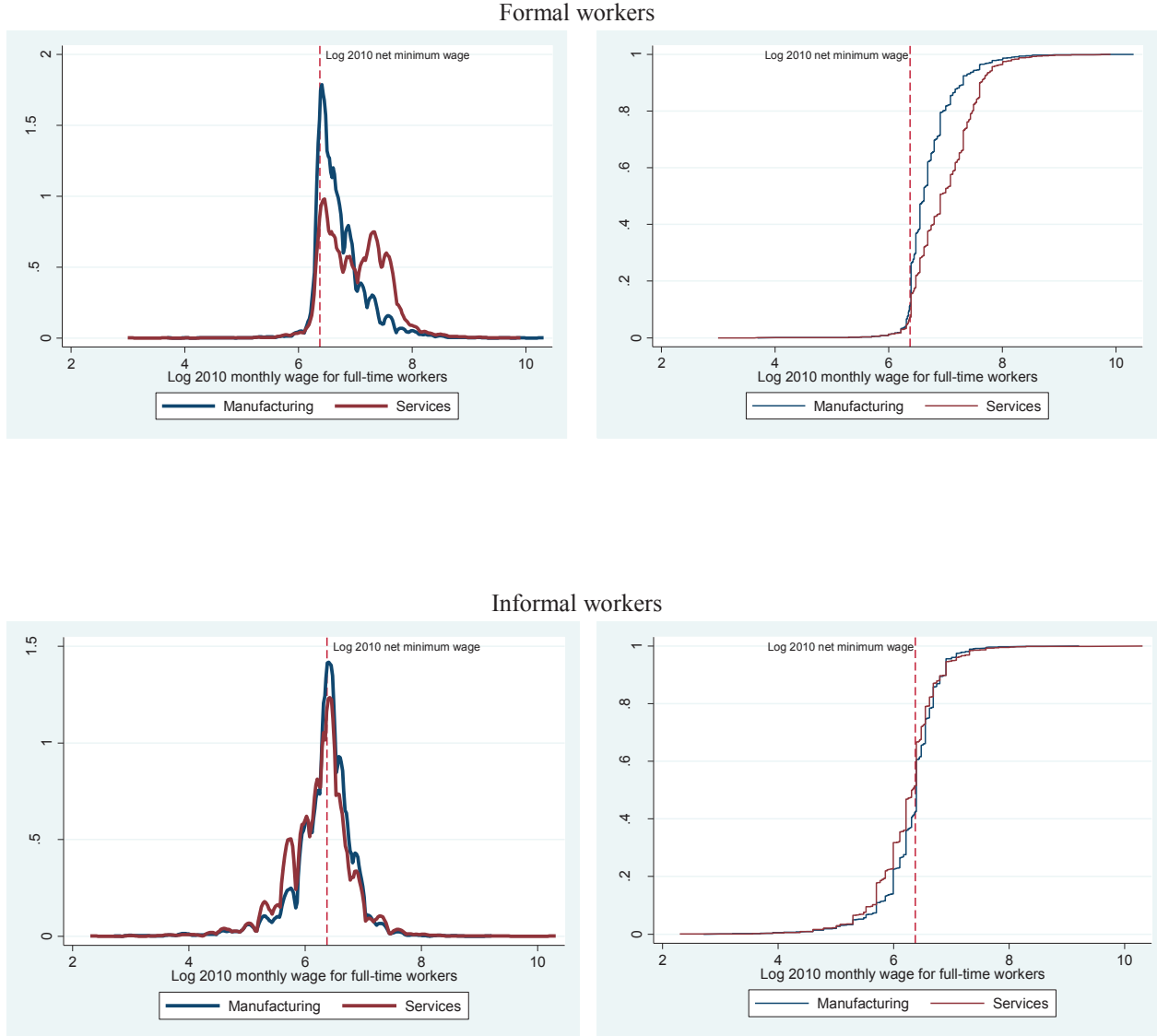
4.10. **Minimum wages appear to be binding for formal sector workers.** The minimum wage is well established as a wage floor, with only 7 and 10 percent of formal workers earnings below this wage in, respectively, services and manufacturing. It also exhibits the usual signs of binding wages, with significant bunching around it (top panel of Figure 4.5). The same is not true in the informal sector. Almost half of informal workers, 42 percent in manufacturing and 52 percent in services earn below the statutory minimum wage. Moreover, real wages in Turkey do not appear to be tied to changes in labor productivity (World Bank 2012). This was especially true during the recent crisis and recovery period, but is also part of a longer trend. The key implication is that earnings do not function as the adjustment

⁹ This was due to a 38 percent increase in the minimum wage in January 2004 (Papps (2012), “The Effects of Social Security taxes and minimum wages on employment: Evidence from Turkey,” *Industrial and Labor Relations Review* 65(3), 686-707.

¹⁰ Abowd, Kramarz, and Margolis (1999), “High wage workers and high wage firms,” *Econometrica* 67, 251-333; Maloney and Mendez (2004), “Measuring the impact of minimum wages: Evidence from Latin America,” in J. Heckman and C. Pages (eds.), *Law and Employment: Lessons from Latin America and the Caribbean*, 109-130; Card and Krueger (1994), “Minimum wages and employment: A case study of the fast-food industry in New Jersey and Pennsylvania,” *American Economic Review* 84, 772-93.

instrument in the Turkish labor market, implying that adjustment takes place through layoffs. This can perhaps be attributed to the constraint imposed by the binding minimum wage as well as by the translation of minimum wage increases across the wage distribution.

Figure 4.5. Minimum wages in Turkey are Binding for Formal Workers



Source: Author's calculations based on 2010 Labor Force Survey (annual file).

Note: Net 2010 minimum wage is taken as the average of the Jan-June (576.57 TL) and July-Dec (599.12 TL) (Source: <http://www.csgeb.gov.tr/csgebPortal/cgm.portal?page=asgari>).

High Labor Tax Wedge

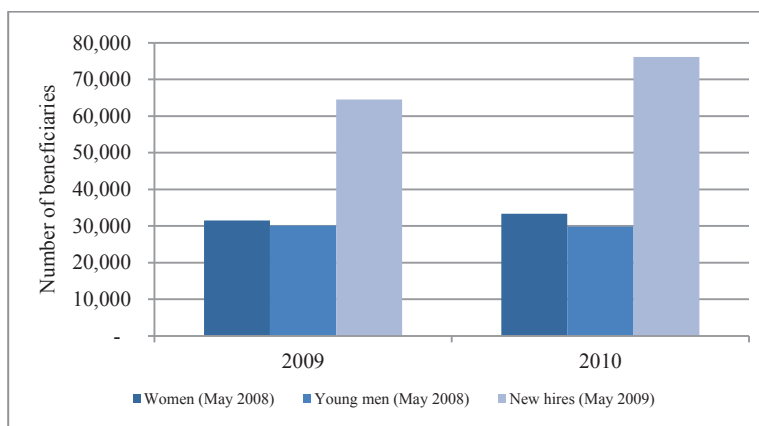
4.11. **The extent to which the minimum wage is binding may be overstated if employers are underreporting wages to avoid paying high social contributions.** A portion of the bunching that is observed around the minimum wage may be due to the fact that many employees are claiming minimum wages, but their total take home pay is larger due to additional unofficial payments. Anecdotal evidence is all there is to support this claim, but it does suggest the high labor tax wedge may be determining labor

markets outcomes. Recent policy action also points to the desire to reduce the high labor tax wedge. The May 2008 employment package introduced two reductions in employers' social security contributions: (1) an across-the-board 5 percentage point cut from 19.5 percent of the gross wage bill to 14.5 percent, and (2) temporary and gradually-phased-out reductions for women and young (18-29) workers, who have been hired between May 2008 and July 2010 and who have been unemployed for at least 6 months.¹¹ A crisis-response package added another measure reducing employers' social security contributions, this time for the unemployment insurance beneficiaries who have been unemployed for at least three months.¹² Reductions in the labor tax wedge, and thus in labor costs, can potentially spur employment and reduce employers' incentive to hire workers informally.

4.12. Targeted reductions in the labor tax wedge are considered to be more cost-effective than across-the-board measures. Both the across-the-board and the targeted cuts in social security contributions likely contributed to fewer layoffs during the crisis and stimulated quicker employment recovery through reduced hiring costs. The two measures, nevertheless, differ in terms of their expected effectiveness in promoting employment and formalization as well as in terms of their cost efficiency. Since the true tax burden is shared by employers and employees (regardless of who actually pays the tax), employees expect to benefit from reductions in employers' social security contributions, and thus they expect to receive higher wages. This implies that labor costs fall by less than the reduction of the employer's social security contributions. How much less depends on the level of employee wages, with higher labor cost reduction for lower-wage workers.¹³

4.13. Recent empirical work supports targeted reductions in social security contributions. World Bank (2009) shows that for every 1 percentage point reduction in employers' social security contributions for *average-wage* workers, employment increases only by 0.15 percent, as 70 percent of the reduction gets translated into higher employee wages, while 30 percent goes into reduced labor costs. On the other hand, the same study estimated that three-quarters of the cuts in social security contributions for *minimum-wage* workers would be translated into reduced labor costs, with only 25 percent captured by workers through higher wages. Thus, reductions in the tax wedge targeted at workers in the bottom of the wage distribution (such as women and youth) are expected to be more cost-effective than across-the-board cuts. Recent OECD (2011) work supports this empirical finding.¹⁴ While a number of strong assumptions are used in the analysis, the results indicate

Figure 4.6. Job Creation and the Reduction in Employer Social Security Contributions



Source: Author's calculations based on OECD (2011).

reductions in the tax wedge targeted at workers in the bottom of the wage distribution (such as women and youth) are expected to be more cost-effective than across-the-board cuts. Recent OECD (2011) work supports this empirical finding.¹⁴ While a number of strong assumptions are used in the analysis, the results indicate

¹¹ The phase out for this policy measure occurs over five years, with the first year's contributions covered completely by the government, falling gradually to only 20 percent coverage in the fifth year.

¹² Employers hiring these workers would not have to pay social security contributions for 6 months, if these new hires represented an increase over the employers' April 2009 workforce.

¹³ World Bank (2009), "Estimating the Impact of Labor Taxes on Employment and the Balances of the Social Insurance Funds in Turkey," Report No. 44056-TR.

¹⁴ OECD (2011), "Turkey: Supporting employment through reduced social security contributions," G20 Country Policy Briefs, G20 Meeting of Labor and Employment Ministers, 26-27 September, Paris.

that the across-the-board reduction appears to have produced many more “beneficiaries” (900,000) compared to targeted interventions (125,000) (Figure 4.6). However, the cost per job created by the across the board reduction is more than three times that of the latter (4,000 TRY versus 1,100-1,300 TRY).

Table 4.3. Cost Per Job Created With Employers’ Social Security Contribution Reductions

	Beneficiaries	Cost (millions TRY)	Cost per job created (TRY)
Across-the-board reduction			
2009	5,500,000	3,300	
2010	6,400,000	4,100	
Estimate of jobs created	900,000	3,700 ^a	4,111.11
Targeted reductions (women and young workers)			
2009	61,615	81	1,314.61
2010	63,230	137 ^b	
Estimate of jobs created	124,845 ^c	137 ^b	1,097.36

Source: Author’s calculations based on OECD (2011).

Notes:

^a Since these marginal 900,000 jobs could have been created at some point between 2009 and 2010, the cost is taken as the average of these two data points.

^b This cost includes 100 percent coverage of new jobs’ SS contributions and gradual phase-out of jobs created in 2009.

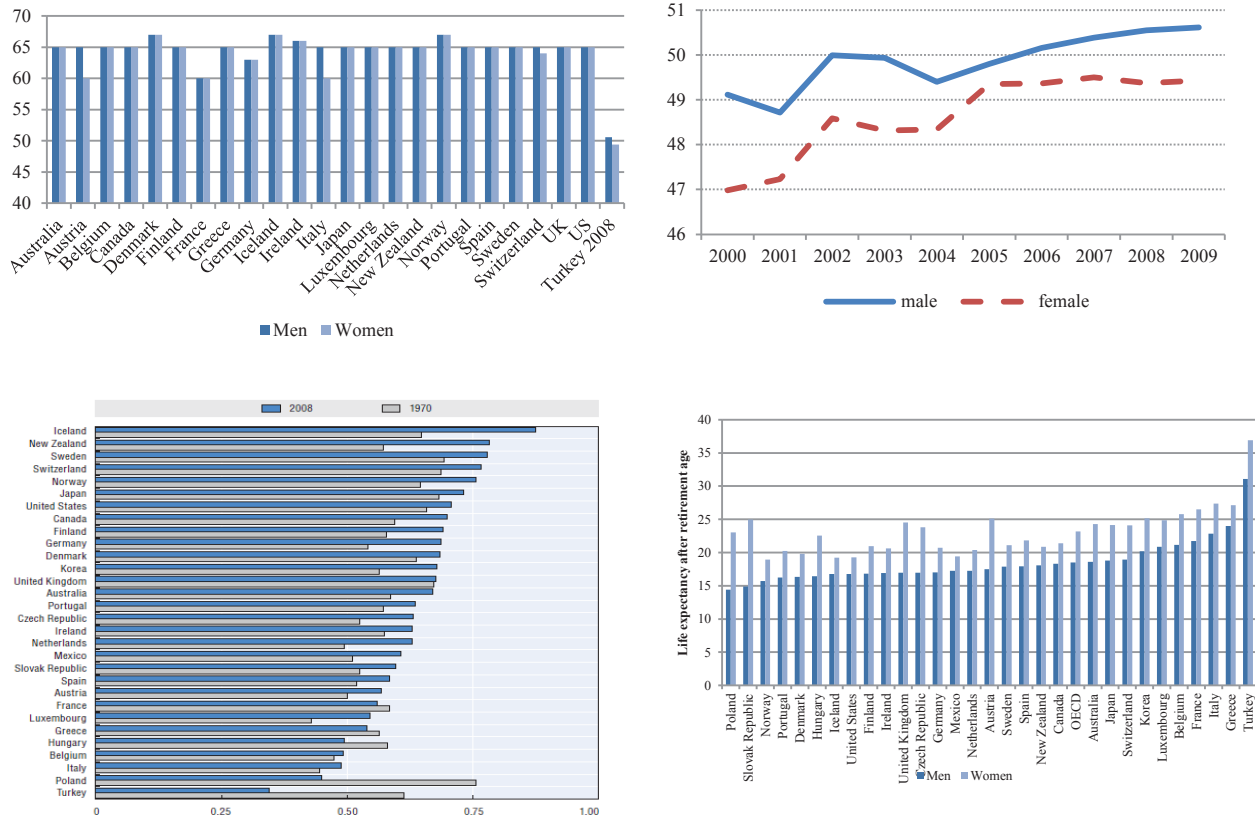
^c This assumes that all jobs created in 2009 were kept through 2010.

High Pension Benefits

4.14. **A third policy feature of the labor market to highlight is the low retirement age and the consequent long duration of retirement benefits.** At 50 years of age, Turkey’s average retirement age is the lowest in the OECD by about 10 years. Moreover, the pace of change in the retirement age has been glacial (Figure 4.7). The low retirement age and the long duration of benefits deprive Turkey of the productive potential of its middle-aged workers, while imparting significant fiscal costs. The pension reform of 2006-08 increased the statutory retirement to 60 for men and 58 for women, effective for those who entered the system between September 1999 and October 2008. For entrants after October 2008, the retirement age rises gradually to reach 65 for both men and women by 2046 (for men) and by 2048 (for women). The resulting growth in the retirement age is only about 2 months per year as opposed to 6 months in many East European countries. The implication is comparatively low labor force participation rates for the 50-64 age group at about 30 percent. Moreover, the early retirement age entails a long duration of benefits: in 2010, 45 year-old men and 41-year-old women came of retirement age, as their cohort was grandfathered in the 1998-9 reform and thus not subject to the official retirement age of 60 for men and 58 for women.¹⁵ For these retirement ages, the average life expectancy is 31 years for men and 37 years for women, which is, respectively, 7 and 10 years longer than Greece – the country with the second-highest benefit duration in the OECD.

¹⁵ OECD (2011b), *Pensions at a Glance 2011: Retirement-Income Systems in OECD and G20 Countries*, OECD Publishing.

Figure 4.7. Turkey: Retirement Age and Implications



Source: Author's calculations based on OECD data.

4.15. **The high minimum pension lowers the rewards to working past statutory retirement age and creates disincentives to declaring true wages.** Turkey has the second-highest ratio of minimum pension to average earnings in the OECD, with contributory minimum pensions representing almost 40 percent of average earnings. In 2009, the minimum pension was set at 591-608 TRY, which was more than the net minimum wage (527-546 TRY).¹⁶ While such generous benefits ensure adequate living standards in retirement for low-wage workers, they reduce the incentives for people to work longer and create a disincentive to declare wages that are higher than the minimum wage. As the replacement rate for minimum wages is above that for higher wages, both workers and employers benefit from declaring only a minimum wage, and paying the rest informally. In fact, 44 percent of men and 37 percent of women declare and pay contributions on minimum wage earnings.¹⁷ Thus, adjusting the relative level of the minimum pension will not only decrease the fiscal pressure on the pension system as more people would continue working, it would also encourage full declaration of earnings in order to attain a higher pension.

¹⁶ Data from Ministry of Labor and Social Security (<http://www.csgeb.gov.tr/csgebPortal/cgm.portal?page=asgari>) (net minimum wage for workers 16+ years of age on administrative account), and OECD (2011b).

¹⁷ World Bank (2011). Pension policy note.

D. POLICY SIMULATIONS: OPTIONS TO ENHANCE FORMAL EMPLOYMENT IN TURKEY

4.16. **The binding minimum wage, the high labor tax wedge and the pension system are identified as three key policies that are impacting labor market outcomes in Turkey.** Policy changes in these areas can enhance formal employment, especially for females and youth to support trends observed during and in the post crisis period. Moreover, policy changes in these areas support one of the main messages in Chapter 3, which underlines the limits to an investment led growth strategy in Turkey. Formal employment growth and faster TFP growth must be the key ingredients to sustain high growth rates in the medium-to-long term. Making the most of the ‘demographic dividend’ will take policy action in many areas. We focus here on reductions in social contributions, reducing the minimum wage and a policy of up-skilling labor force participants. These policy experiments aim to consider the impacts of a higher level of employment as well as more productive employment.¹⁸

Scenario I: Reducing Social Contributions

4.17. **The targeted reduction in social contributions rates in 2008 likely explains a portion of the post-crisis increase in formal employment.** The first policy experiment aims to simulate the impacts of the 2008 reform in social contributions. The objective is to estimate how much of the recent upturn in employment might be attributable to these reforms. We simulate a 25 percent cut in the social security contributions of employers for their female and/or youth employees, which roughly corresponds to the targeted measures of the 2008 reform. We find that the targeted portion of the measures results in a 0.21 percent increase in total employment. This implies that about 15 percent of the actual increase in employment observed in 2010 can be attributed to the 2008 policy reform. Female employment increases by 0.65 percent, while youth employment increases by 0.46 percent. These findings are smaller in magnitude than the OECD simulations. With the reduction in across-the board contributions we find that the higher consumption demand leads to a switch in employment from lower skill sectors to higher skilled service sectors. As a result, for example low-skilled male employment hardly increases at all.

Table 4.4. Targeted Reductions in Social Contributions
(percent changes)

Employment Changes		Formality Changes	
Female Employment	0.65	Female Formality Rate	0.58
Male Employment	0.02	Male Formality Rate	0.17
Age 15-29 Employment	0.46	Age 15-29 Formality Rate	0.71
Lower Skills Employment	0.13	Lower Skills Formality Rate	0.26
Higher Skills Employment	0.35	Higher Skills Formality Rate	0.13
Total Employment	0.21	Total Formality Rate	0.19

Source: Bank staff calculations based on simulation results.

4.18. **The reduction in social contributions likely explains a portion of the reduction in employment informality.** The simulations show the important role that the informal labor market plays in labor market outcomes in Turkey. The across-the-board reductions in employer social contributions do seem to have significantly reduced employment informality. Total employment formality increases by over 1 percent. Both male and female employment and virtually all employment categories experience

¹⁸ The policy simulations that follow are run to be fiscally neutral in the sense that any fiscal shortfall is assumed to be plugged by higher effective capital taxation. There is no scenario where effective capital taxation grows to unreasonable levels.

similar increases in formality, with low-skilled workers increasing the most at over 2 percent. The targeted reductions also enhance formality, but to a lesser degree. Taken together, these results indicate that additional reductions in social security contributions could be considered to promote additional employment gains and reductions in informality, but measures targeted to lower-wage workers are less likely to be captured by workers in terms of higher earnings and more likely to result in higher employment. One important caveat is that targeting should be based on observable characteristics of lower-wage workers, such as age or gender. Targeting based directly on wages could create an incentive to under-declare earnings in order to qualify.¹⁹

Table 4.5. Across the Board Reductions in Social Contributions
(percent changes)

Employment Changes		Formality Changes	
Female Employment	0.16	Female Formality Rate	1.73
Male Employment	-0.06	Male Formality Rate	1.16
Age 15-29 Employment	0.08	Age 15-29 Formality Rate	1.25
Lower Skills Employment	-0.29	Lower Skills Formality Rate	2.09
Higher Skills Employment	0.54	Higher Skills Formality Rate	0.25
Total Employment	0.00	Total Formality Rate	1.14

Source: Bank staff calculations based on simulation results.

Scenario II: Reduction in the minimum wage

4.19. **Reducing the minimum wage has strong impacts on formality.** The second policy experiment is a 25 percent reduction in the minimum wage from current levels. The simulations show a rather strong effect on formality, with overall employment formality increasing by 3.3 percent. Moreover, the increases are found across all labor categories. Lower-skilled workers see a particularly strong increase of over 5 percent. Somewhat surprising is the impacts on overall employment levels. There is very little impact on overall employment, but strong compositional effects. There seems to be a strong negative labor supply effect with the reduction in the minimum wage for men and those at the higher skill levels. Alternatively for females and youth, we find strong positive employment effects, with female employment rising by almost 1.5 percent. Overall employment falls as a result of the compositional changes across labor categories (-0.62 percent). Labor supply is reduced for low skilled men, who might see their earnings fall below their reservation wage. Real minimum wage decreases, or at least more judicious increases in the nominal minimum wage, can reduce the formal wage premium and thereby encourage employers to hire low-skilled female workers in the formal sector.

¹⁹ For this and the flowing scenarios the main product markets elasticity assumptions in the model are documented in Annex 1, Box 1.

Table 4.6. Reduction in the Minimum Wage
(percent changes)

Employment Changes		Formality Changes	
Female Employment	1.34	Female Formality Rate	0.86
Male Employment	-1.45	Male Formality Rate	3.80
Age 15-29 Employment	0.58	Age 15-29 Formality Rate	1.61
Lower Skills Employment	-0.69	Lower Skills Formality Rate	5.76
Higher Skills Employment	-0.49	Higher Skills Formality Rate	0.38
Total Employment	-0.62	Total Formality Rate	3.03

Source: Bank staff calculations based on simulation results.

Scenario III: Increasing Female Labor Force Participation

4.20. **An increase in the female labor force participation rate supports significantly higher growth.** Chapter 3 emphasized the importance of labor and total factor productivity for future growth prospects in the country. Specifically, it notes the importance of increasing the female labor force participation rate given its current low level. This scenario models an increase the female participation rate from its current rate of about 40 percent of the male participation rate to 80 percent by 2020. The scenario is not meant to model a precise policy measure that would induce greater female labor force participation. The aim is to indicate the main macroeconomic effects of the increase. The first result to note is that real GDP growth increases from 2.2 percent in 2012 to about 4.8 percent over the medium-term. This is a particularly strong result and in the current growth environment would be a welcomed boost. Combined with faster TFP growth the results are even more impressive and are consistent with the growth accounting scenarios presented in Chapter 3.

4.21. **Higher female labor force participation rate supports fiscal prudence and less volatile economic growth.** The results do show that most of the female employment growth is absorbed by the informal sector as the binding minimum wage limits employment increases in the formal sector. Nevertheless, formality does increase as lower-skilled men come into the formal sector at increasing rates. This result is consistent with the empirical work of Başkaya and Hülügü (2011) who show that women and young workers are more affected by the formal wage premium than males and older workers. It is also consistent with the results in the previous policy simulation. The fiscal implication is that employer social contributions increase over the period and the effective corporate income tax rate does not need to be raised as much to balance the budget as in the other scenarios presented. Investment needs decline as labor supply increases generate more labor intensive economic growth. The current account deficit remains around 6 percent in this scenario, not unlike the deficit maintained in earlier scenarios labeled as more domestically financed growth. In this regard, the scenario mimics more domestically financed growth, and thus less volatile economic growth.

Annex 1. CGE Model Features

Recursive-dynamic

The model is recursive-dynamic. This reflects that the model has two key elements: a static model and an intertemporal or dynamic link. The detailed static model is solved for a single period's (e.g., one year) general equilibrium, reflecting a variety of constraints and values for exogenous variables. Given the initial position of the economy represented in the data, the assumptions concerning the nature of underlying economic behavior and the specified exogenous constraints, the static equilibrium reflects an optimum solution. In this sense, the solution of the model would be replicated until some exogenous change, such as a new investment project, a change in government policy, changes in world prices and/or the composition of the labor force alters economic conditions and causes the allocation of resources to adjust.

Once a static equilibrium is achieved, the intertemporal link "updates" the data reflecting the position of the economy (e.g., capital stocks adjusted for depreciation and new investment), exogenous variables (e.g., world commodity prices) and policy parameters (e.g., changes in trade restrictions as part of a multi-year program of reform). This is accomplished with a series of linkage equations and provides the basis for solving the next period's static model.

An alternative fully dynamic specification, which takes agents' expectations into consideration in a dynamic optimizing framework, can be specified in a second stage of this modelling effort.

Computable general equilibrium

The term computable reflects the numerical specification of the model that can be solved quantitatively with a computer. The term general equilibrium refers to the inclusion of production and demand relationships, the interrelationships between them and the simultaneous determination of prices through the interaction of demand and supply in all markets. As is noted later however, this does not mean that all markets must clear at their full employment level.

In their treatment of production and demand, CGE models incorporate the conventional features of neo-classical microeconomics. They assume optimizing behavior on the part of producers (profit maximization, cost minimization) and consumers (utility maximization) subject to various constraints in the economy such as the supply of factors of production - labor, capital, land - and restrictions on the government budget, the balance of payment and so on. The resulting equations emphasize the responsiveness of the economic agents to changes in relative prices, with the degree of responsiveness imposed dependent of the values assigned to substitution elasticities.

Johansen type

This label refers to the way in which the model is solved. CGE models fall into two groups:

- (i) models that are solved in the levels of variables; and
- (ii) models that are solved in logarithmic differentials or percentage changes.

There is a long running debate about the relative merits of each type of solution. The debate is to a wide extent artificial, since developments in computer software have made the two types equivalent. The choice of model type employed by modelers is primarily determined by individual tastes.

The type (i) approach produces exact solutions. It requires a flexible solution algorithm that can solve non-linear systems of equations. With the rapid development of computer software in this area this

has become much less of a problem than it used to be. The type (ii) approach, pioneered by Johansen (1960)⁴³ is used by the Australian Impact School of CGE modelers (see Dixon et al. (1982)⁴⁴, (1992)⁴⁵). It involves totally differentiating all equations of the model to achieve a system linear in percentage change of the variables. Simple matrix manipulation methods or linear programming are then used to generate solutions.

Compared with type (i) approach, type (ii) has one disadvantage - the results are only linear approximations to the non-linear system and hence are strictly valid only for small changes. Again, developments of advanced extrapolation techniques, have made it possible to generate more exact solutions. Furthermore, there are a number of advantages - flexible-form functions can readily be specified and when there are several policy changes under study, the separate effects of each can be decomposed additively. Because of these advantages the model in this study is designed around the type (ii) Johansen approach.

Model Structure

The model is inter-temporal in the sense that saving decisions of economic agents affect the future economic outcomes through accumulation of productive capital. Given the recursive structure of the model, the evolution over time can be described as a sequence of single period temporary equilibria. The main characteristics of these equilibria are outlined below, a more technical description of the model is given in the next section.

Production

The model includes 17 production sectors that represent an aggregation of the whole economy:

All sectors apart are assumed to operate under a constant return to scale technology, i.e. doubling all inputs would result in doubling the output of the sector. The quantities of all inputs are chosen optimally by producers in order to minimize cost given the level of sectoral demand and relative after-tax input prices. Once the optimal combination of inputs is determined, sectoral output prices are calculated for each period assuming competitive conditions in all markets. Since each sector supplies input to other sectors, the output price of the supplying sector becomes the input price in the receiving sectors. Thus, the optimal combination of inputs is determined simultaneously in all sectors. Producers are assumed to decide whether to supply to the domestic market or to export according to domestic market prices and exogenously given foreign prices.

	Sector
1	Agriculture
2	Fishing
3	Mining
4	Petroleum & Gas
5	Manufacturing
6	Electricity
7	Constructions
8	Wholesale and Retail Trade
9	Hotels and Restaurant Services
10	Transportation
11	Financial Services
12	Dwelling Services
13	Other Private Business Services
14	Public Services and Administration
15	Education Services
16	Health Services
17	Other Services

⁴³ Johansen, L. (1960) A Multisectoral Study of Economic Growth, North Holland, Amsterdam

⁴⁴ Dixon P., B. Parmenter, J. Sutton and D. Vincent (1982) ORANI: A Multisectoral Model of the Australian Economy, North Holland, Amsterdam.

⁴⁵ Dixon P., B. Parmenter, A. Powell and P. Wilcoxon (1992) Notes and Problems in Applied General Equilibrium Economics, North Holland, Amsterdam.

The assumption of competitive conditions in all markets is only made for convenience at this stage. Other types of market clearing mechanisms, such as monopolistic competition or mark-up pricing, can be incorporated in the framework.

Primary Factors

Labor

The labor force is split between into 24 separate labor types according to Gender (Male, Female), social insurance status (Yes: Formal, No: Informal), skill levels (Lower: Education = None + Primary + Lower secondary, Higher: Education = Higher secondary + Tertiary) as well as age groups (15-29, 30-54, 55-).

General Capital

General capital factors are assumed to include all types of assets, such as land, constructions and machinery. Each of the institution are allocated an initial holding of general capital according to the return on the capital stock in 2010 our base year. The general capital is tradable between the sectors.

Capital income is split between households, the foreign sector and government according to their shares in capital ownership – given initially by the institutional share in capital income in the base year. The capital ownership is updated by the institutional savings net of depreciations.

Households

For households, are split into 6 types of representative consumers:

The consumers are assumed to allocate their disposable income optimally among goods, leisure, services and savings. Labor income generated by economic activity is allocated to the households according to the supply of each type of labor of each household. The households are having an endowment of labor types. Each household type is allocated an endowment of the 12 aggregated labor factors where the formality status is aggregated. The household choses optimally the desired level of leisure it wishes to consume of each of the labor types according to preferences and

relative prices of leisure - after-tax wage rate for the labor type - and other goods consumption and the income from sales of the labor endowment not consumed as leisure and capital income. The supplies of formal and informal labor types are chosen optimally to maximize the labor income - given the formal and informal after-tax wages and preferences for each type of employment. The formulation of the labor market only distinguishes between employed and voluntary inactive labor. In the model, all unemployment is assumed to be voluntary for a given wage level. In addition to factor incomes, households receive a part of their income in the form of transfers from government and net transfers from abroad.

	Gender	Formality Status	Education	Age
1	Male	Formal	Lower	15-29
2				30-54
3				55-
4			Higher	15-29
5				30-54
6				55-
7		Informal	Lower	15-29
8				30-54
9				55-
10			Higher	15-29
11				30-54
12				55-
13	Female	Formal	Lower	15-29
14				30-54
15				55-
16			Higher	15-29
17				30-54
18				55-
19		Informal	Lower	15-29
20				30-54
21				55-
22			Higher	15-29
23				30-54
24				55-

	Location	Income Level
1	Rural	Low Income
2		Middle Income
3		High Income
4	Urban	Low Income
5		Middle Income
6		High Income

Foreign Trade

A key feature of CGE trade analysis is the identification of imports using product differentiation. The Armington specification, Armington (1969),⁴⁶ that stipulates that products are differentiated according to the country of origin or destination, is used to achieve this. With the Armington specification, imported commodities are treated as imperfect substitutes for domestically produced commodities of the same category. In intermediate and final consumption domestic goods and imports are split according to relative prices and preferences. These preferences are derived from a cost minimizing aggregation framework.

The product differentiation is retained on the exports side. This assumption implies that the economy faces a downward sloping demand curve for its products.

Government

Government collects indirect taxes on consumption expenditure, collects social contributions on formal labor inputs in production from employers and households respectively. In addition direct taxes are collected on net-factor incomes. Taxes influence the decisions of economic agents by changing relative prices and disposable incomes. Tax revenues are endogenous in the model, since they depend on the level of economic activity.

Government expenditure is allocated exogenously as policy parameter between consumption of different types of commodities, services and transfers to the private sector (including interest payments). The residual between government revenue and its expenditure (the operational balance) is allocated to government savings.

Investment

Because of our assumption of one type of non-sector specific capital that is used in all competitive sectors of the economy, the model need not incorporate any explicit investment behavior by firms. In each period the aggregate level of investment is derived as the identical sum of household savings, the government savings and the foreign inflow savings, deflated by an aggregate price for investment goods. Aggregate investments are translated into demand for goods and services used to produce the investment goods. The investment is added to the existing depreciated stock of general capital assets used by the producers and equalizes all competitive sectoral profit rates.

Box A1. Main Elasticity Assumptions

In production sectors we have assumed that the only limited substitution possibilities exist between intermediate inputs and between intermediate inputs and production factors. We have assumed higher substitution possibilities between different types of production factors, but low substitution between different types of formality in the production.

Only limited substitution is assumed between lower skilled and higher skilled labor types. Firms are assumed not easily to move from formal status to informal status. However, households are assumed to have a relatively high degree of substitution between supply of labor to formal or informal labor occupations.

We have assumed a higher degree of substitution between commodities in consumption and lower degree of substitution between commodities and leisure. International trade substitution elasticities are set at normal literature estimates.

⁴⁶ Armington, p. (1969) The geographic pattern trade and the effects of price changes, IMF Staff Papers, vol. 16, July, 176-199.

The Social Accounting Matrix

A social accounting matrix (SAM) is used as the organizational framework for building a CGE model. The input-output table, which portrays the system of inter-industry linkages in the economy is the foundation of the SAM. The purchase of an intermediate input by one sector represents the sale of that same input by another sector. While this transaction is entered in a single cell in the input-output table it appears in the accounts of the two different sectors using traditional double-entry book keeping. The SAM generalizes the input-output idea that one sector's purchase is another sector's sale to include all transactions in the economy, not just inter-industry flows. A flow of money from a household to a productive sector (representing the purchase of that sector's output by the household), or from a household to the government (representing tax payments) is recorded in the SAM as a delivery by some actor (the column) to some other actor (the row).

The second key feature of the SAM is derived from national income accounting, which states that income always equals expenditure. While true for the economy as a whole, the SAM requires a balance in the accounts of every factor in the economy. For example, the income from sales in the agricultural sector must equal its total expenditure on intermediate inputs, labor, imports, and capital services. Traditionally, this is captured in double-entry bookkeeping by the requirement that the two sides of the ledger must equal. In the SAM, incomes appear along the rows, and expenditure appears down the columns; thus the budget constraints require that the row sum (income) must equal the column sum (expenditure).

The SAM also distinguishes between activities and commodities. This permits an expansion of the SAM to a situation where more than one type of activity produce the same commodity, thereby allowing for different production technologies. Likewise, this treatment permits one single activity to produce more than one commodity, thereby allowing for joint production technologies.

Figure 1. Schematic SAM

		Activities	Goods & Services	Factors		Institutions			Capital	Total
				Labour	Capital	Households	Government	RoW		
Activities			Supply [17x17]							[17x1]
Goods & Services		Intermediate consumption [17x17]				Private consumption [17x6]	Government Consumption [17x1]	Exports [17x1]	Investment [17x1]	[17x1]
Factors	Labour	Labour costs [1x24]								[1x1]
	Capital	Operating Surplus [1x17]								[1x1]
Institutions	Households			After-tax Labour income [6x24]	After-tax capital income [6x1]		Transfers [6x1]	External Transfers [6x1]		[1x1]
	Government		Indirect Taxes [1x17]	Personal Income taxes & Social contributions [1x12]+[2x12]	Corporate Income taxes & Capital Incomes [1x1]+[1x1]	Fees and Fines [1x1]				[1x1]
	RoW		Imports 1x17		Capital Incomes [1x1]					[1x1]
Capital						Private Savings [1x6]	Government Savings [1x1]	External Savings [1x1]		[1x1]
Total		[1x17]	[1x17]	[1x1]	[1x1]	[1x1]	[1x1]	[1x1]	[1x1]	

Reading first across the activities row in the schematic SAM in Figure 2.1, it is observed that total income derives from domestic sales, subsidies and export earnings. The activities column contains all expenditures on inputs into the production process: on intermediate inputs; on value added; and on

indirect taxes. The value of intermediate inputs is the value of inter-industry flows. It gives the value of output at market prices, when combined with value added, made up of wages and capital rental, and excise taxes. This must balance the total revenue from output sold on domestic and overseas export markets, inclusive of subsidies.

The commodities column shows purchases of domestic products from the activity account and purchases of imports from the rest of world; it also pays import tariffs to government. The commodities row shows how the total supply of commodities domestically is demanded by domestic purchasers, comprising: intermediate inputs; household and government consumption; and investment goods.

The SAM for Turkey has a commodity account with an identical breakdown to that of activities implying a 1:1 relationship between activities and commodities.

The factors account describes the payment to factors of production and the distribution of income to households, Government, and to foreigners owning factors employed domestically. Wage income from labor and capital rents accrues to households after deducting income and corporate taxes paid to government.

The households account shows that households, in turn, divide the income from the factor account as well as any transfers from government and the rest of the world, between private consumption of goods, income and consumption taxes, and private savings.

Similar to the household account, in the government account, the government receives income from foreign aid and taxes including: tariffs; indirect taxes; income and consumption taxes. It spends the income on consumption, transfers to households, subsidies to activities and savings.

The last two rows and columns contain familiar national accounts identities. The capital account reflects the equality between savings (the row, comprised of private, government, and foreign components), and investment (the column). The investments are broken down into the intermediate commodity demands required for capital formation. The rest of the world account represents the equality between foreign exchange expenditures, imports, and foreign exchange earnings, exports and foreign savings.

Information about the structure of the economy must be up to date to be of any relevance to policy makers. This is especially true for Turkey where the sector and trade structures have changed dramatically over the last decade.

The data requirements for the SAM are extensive and a substantial amount of work must be dedicated to constructing it. Most countries do not publish SAM versions of their national accounts. The detailed information in national accounts is largely a by-product of the process of assembling macro-aggregates and typically does not aim at the consistency in the various areas of detail that a SAM requires. Turkey is in this respect no exception.

These circumstances necessitate the collection of data from a variety of sources. Data are needed on the use of productive inputs by the sectors. On the demand side, information is required on the expenditure patterns of different consumer groups and on the composition of their incomes. To incorporate the public sector into the SAM, data are required on tax revenues, tax payments by agents, subsidy receipts, and transfers. Data on government expenditures on goods and services are also required. Data on the international trade flows are required to incorporate the international links of the economy. Finally, data are also needed on the intermediate demand components of investment capital.

In constructing the SAM, various adjustments have been necessary to the blocks of data that are available separately, but are not arranged on a consistent basis. Classifications differ and totals do not agree. For example, household expenditure data is usually inconsistent with production data. Consumer expenditure categories are often incompatible with the industry products by which the final consumer expenditure by product must be recorded in input-output data. Another difficulty is that producer-output classification refers to measures of the value of output net of transportation costs and on the basis of net-of-retail and wholesale margins, whereas consumer-expenditure classifications are on a gross basis.

Adjustments arise with the need to guarantee mutual consistency between inconsistent data. The construction of most SAMs relies heavily on the “RAS adjustment method”, Bacharach, (1970)⁴⁷ for these modifications. However, in constructing the SAM for Turkey, we have implemented the “Generalized Friedlander Method”, Bartholdy (1983),⁴⁸ which makes more efficient use of any additional information available. These techniques are applied after modifications are made to the classifications’ inconsistencies, when incomes do not equal expenditures. The theoretical foundations of these methods are described in Gradzewicz, et. al. (2006).⁴⁹ The SAM for 2010 is given in appendix A1.

The SAM for Turkey has been developed using a step-wise approach: First, the aggregate national accounts for 2010 have been reformulated in a SAM structure – thus ensuring consistency with aggregate government and balance of payment accounts. Second, the IO matrix for 2002 was aggregated to correspond to the 17 NACE sectors of the national accounts. Third, the production and domestic consumption accounts of the aggregate SAM was split using shares of the 2002 IO table. Import and Exports of goods were taken from the trade accounts of 2010 with service trade allocated according to shares given by the updated IO table. Fourth, the resulting SAM with disaggregated activities and commodities accounts was balanced using the generalized Friedlander method. Fifth, the disaggregated labor wages by sectors, commodity expenditures of disaggregated households, factor incomes of disaggregated households, and labor tax revenues were disaggregated using shares from the HBS 2010. The resulting SAM with sectors, commodities, factors, and household institutions all being disaggregated households was again balanced using the generalized Friedlander method. Files demonstrating how these steps have been applied in Microsoft Excel for constructing and balancing the SAM for the model can be obtained from the author upon request.⁵⁰

⁴⁷ Bacharach, M., *Biproportional Matrices and Input-Output Change*, Cambridge University press, 1970.

⁴⁸ Bartholdy, K., *Metoder til Afstemning af Nationalregnskabsmatricer*, University of Copenhagen, 1983.

⁴⁹ Gradzewicz, M., P. Griffin, and Z. Zolkiewski, *An Empirical Recursive-Dynamic General Equilibrium Model of Poland’s Economy*, Joint Publication, World Bank and National Bank of Poland (2006).

⁵⁰ Write to E-mail: pgriffin@grippinetti.com

Annex 2. Turkey: Household Saving Rates

Regressions for which the results are shown in columns (1)–(3) are ordinary least squares. The dependent saving variable is calculated from Household Budget Survey (HBS) data on disposable income and consumption expenditure: net saving rate = (disposable income – consumption expenditure, including imputed rents for households who own their homes) ÷ disposable income. Income is also widely held to be a key determinant of saving. But as income is both used to calculate the dependent variable and as an independent variable, the measurement error of the dependent and independent variables is not independently distributed. Following Van Rijckeghem (2010), the income variable (log of disposable income) was instrumentalized using access to hot water in the home, number of rooms per adult equivalent (using OECD definitions), and all variables in the saving regression. Health spending risk is the probability of health spending exceeding 10% of consumption expenditures. This risk is estimated using a probit regression with as independent variables: log of non-health expenditures, urban location, whether the household has health insurance and whether they have public health insurance (green card), and the number of household members in the age groups 0-15, 15-39, 40-59 and 60+ years.

Column (1) shows the regression results for the financial saving rate. In column (2), an expanded measure of saving is used, adding saving in the form of gold (proxied by spending on ‘jewelry, gold and watches’ in the HBS dataset), durables (cars and household appliances), and education spending. Average rates of financial saving are 11.6% of disposable income according to HBS data and 12.0% for saving including gold, durables and education spending (this excludes large disinvestments, see below). With such a small difference between the two measures of saving, it is unsurprising that the regression results are very similar. Based on National Accounts data, the difference in the saving measures should be much larger (World Bank, 2012)—the source of this discrepancy is unclear.

Explanatory variables are grouped in socio-economic factors (income and sector of employment), precautionary motives and lifecycle risks, wealth effects, demographic factors and underreporting of income. Socio-economic factors indicate that household which are better off save more. Household location in rural or urban areas was dropped from the regression due to collinearity.

Precautionary motives and lifecycle risks include the impact on household saving of old-age concerns—this is estimated by whether the household is registered for social security. The regression also captures whether the household is at significant risk of health spending—the regression results suggest that anticipation of such risk leads to significant additional saving. Finally, involuntary employment seems to also raise savings for precautionary reasons as households often seem to suspect that the job search may take a while.

Demographic factors consider household composition Younger households should be expected to save more, with saving rates declining particularly after retirement—the regression findings bear this out. Education and gender also play a role.

Wealth effects capture that if households have significant financial or non-financial assets (such as housing and land), they may anticipate that current income from such assets may be outstripped by future valuation increases—such an expectation of wealth gains may then lead them to save less today. The regression findings suggest that wealth effects are significant for home ownership.

Van Rijckeghem points to the potential bias in estimation results due to underreporting of income. Households may be concerned that HBS data are shared with tax authorities or social insurance agencies. In cases of underreporting, measured saving rates would be lower than actual saving rates. Using HBS data through 2008, Van Rijckeghem finds groups with improbable saving ratios including households with disposable income in the lowest quartile but with access to hot water in their homes and where social security status of the household head was not reported. Rather than excluding these groups

from the regression analysis as in Van Rijckeghem, these were added as dummy variables in the regressions under columns (1) and (2). Although households with unreported social security status may have relatively low rates of saving, this can be explained by other characteristics—therefore, the coefficient for this variable is not statistically significant. Households who report a low income but have access to hot water seem to underreport their income. This is corrected by adding a dummy for this group.

We added a dummy for households enrolled in the subsidized and means-tested public health insurance scheme as they may also underreport their income to avoid jeopardizing their eligibility status. However, this group may already save less because they have a lower need for precautionary saving to cover health spending risk. But this impact is already captured through the health spending risk variable. So the statistically significant impact of the dummy variable for public health insurance is likely due to income underreporting. Discounting such mismeasurement by netting out the estimated impact of underreporting raises the household saving rates by about 2½ percentage points (the average financial saving rate would be about 14.1% after accounting for underreporting versus 11.6% without such correction).

Van Rijckeghem also excludes other groups from her analysis. Column (3) shows the regression results dropping these same groups. This includes ‘non-core groups (households with heads who are: below 25 years of age, above 70, student, involuntary unemployed, or unemployed due to disability or sickness, waiting to start a job, or because they have a seasonal job) and ‘large dissevers’. Dummies for non-core groups were added to the regressions under columns (1) and (2)—these were insignificant (i.e., these groups have similar saving behavior to others households) except for involuntarily unemployed, who tend to save more. Finally, the HBS includes 145 households (1½ %) which have negative saving in excess of twice their disposable income. Data for these households is likely to be highly inaccurate. These extreme outliers were excluded from the regressions in all columns.

Appendix Table 1. Determinants of Household Saving Based on HBS 2010 Data

	(1)	(2)	(3)
	Net Financial Saving Share of Disposable Income	Net Total Saving Share of Disposable Income	Net Financial Saving Share of Disposable Income (cf. Van Rijckeghem, 2010)
Socio-economic factors			
Instrument for log disposable income	.352***	.352***	.296***
HH head works in the public sector	-.013	-.013	-.009
Precautionary motives and life cycle risks			
HH head is registered with social security agencies	.020*	.020*	.033***
HH head is registered with the social security agency for public employees	-.000	-.000	.001
HH head's social security registration status is unknown	-.199	-.197	
Health spending risk	1.506***	1.498***	1.246***
HH head is involuntarily unemployed	.062***	.062***	
Demographic factors			
HH head is 40-60 years old	.036***	.037***	.042***
HH head is 60+ years old	.031*	.032*	.027
Share of HH members aged 0-5 years	.564***	.565***	.410***
Share of HH members aged 6-14 years	.378***	.379***	.262***
Share of HH members aged 15-19 years	.102**	.105***	.025
Share of HH members aged 60+ years	-.361***	-.358***	-.305***
Share of HH members who are housewife	-.357***	-.355***	-.338***
HH head has completed secondary education	-.031**	-.030**	-.024*
HH head has completed tertiary education	-.043**	-.042**	-.018
Spouse has completed secondary education	.025	.016	.016
Spouse has completed tertiary education	.027	.028	.026
HH size	-.083***	-.083***	-.054***
Wealth effects			
HH receives interest income	-.027	-.026	-.011
HH owns their home	-.034***	-.033***	-.020*
HH owns a second home	-.038**	-.037**	
HH owns land for construction	-.000	-.000	
Underreporting of income and constant			
HH has public health insurance	-.738***	-.733***	
Low-income HH with access to hot water in the home	-.132***	-.131***	
Constant	-.656***	-.676***	
Regression statistics			
Number of observations	9937	9937	7947
F-statistic	72.77***	73.23***	41.06***
Adjusted R ²	.15	.15	.09
<i>Sources:</i> TurkStat and staff calculations.			

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