23. The analysis so far suggests that saving rates plunged in the 2000s, mainly due to the drop in household saving. It also established that saving in Turkey is low by international standards. This section addresses the implications of low saving for Turkey before discussing its determinants in Section 4. As will be explained, domestic saving or the lack thereof matters for two reasons: (i) domestic saving finances investment and thus growth; and, (ii) the substitute for domestic saving, foreign capital, creates vulnerabilities for the economy.

3.1 The implications of low savings on growth

24. Low domestic saving jeopardizes the sustainability of high growth in Turkey. The relationship between saving and investment (depending on its nature and strength) constitutes a potential channel for transmitting savings into growth. However, irrespective of this degree of association, an increase in the share of domestic financing of growth has also a potentially important role of mitigating external vulnerability.

25. The decline in domestic savings in the 2000s was matched by an increase in the current account deficit (CAD). CAD rises from 2002 through 2007 were largely led by the recovery of investments. The average for CAD as a share of Gross Domestic Income (GDI) increased from nearly one percent in the 1990s to 3.4 percent by 2008, largely because average saving rates dropped. The saving-investment gap, which is the mirror image of the current account balance, increased substantially after the 2001 crisis and was sustained over the decade (Figure 14).

26. To the extent low domestic savings imply higher external financing of investment for a developing country, sustainability of growth faces a significant risk. Figure 15 illustrates conceptually the potential transmission channels from low domestic savings and high external financing to lower growth. There are three main transmission channels:

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26 A more detailed analysis of the transmission channel between saving and growth and the significance of low domestic saving can be found in the background work for this study.
i. For credit-constrained firms (small and medium enterprises (SMEs)) with little or no means of external financing, lack of domestic saving lowers investment (the Feldstein-Horioka puzzle) and thus lowers growth of the economy.

ii. For larger firms, financing investments in good times is not difficult, but the possibility of a reversal in capital inflows creates economic vulnerability. In the extreme event of a sudden stop, for example, not only are investments hit directly by the sudden absence of financing but investor sentiment also declines, further undermining investment and growth.

iii. The continuous flow of foreign capital causes the local currency to appreciate, putting pressure on the profitability and competitiveness of tradable sectors.

Figure 15. Potential Transmission Channels from Savings to Growth

- Low Domestic Savings
- High External Financing Need/K flows
- Credit-constrained firms can not borrow
- Appreciation of the lira
- Large firms build FX liabilities
- Low Investment
- Lower profitability and competitiveness
- Vulnerability – weak investor sentiment
- Lower growth

WHY DOES DOMESTIC SAVING MATTER FOR TURKEY?
27. In the 2000s, countries with higher investment-GDP ratios and smaller CADs grew faster. Figure 16 shows investment to GDP ratios and current account balances for developing countries with GDP per capita of less than USD 12,000. Turkey is one of the countries with an investment-GDP ratio that is below the median and a CAD above the median, based on averages for 2000–08. Countries with large CADs and below-median investment ratios had the lowest average per capita GDP growth in 2000–08. Among countries with high investment-GDP ratios, those with smaller CADs grew significantly faster than those with large CADs. This may suggest that foreign capital is not a perfect substitute for domestic savings. In essence, (following corporate finance terminology) domestic savings may be considered internal finance, which does not impose a cost on the economy in the form of an external finance premium.

28. Heavy reliance on foreign capital inflows may jeopardize the sustainability of growth in Turkey. Empirical evidence suggests that financing the expanding foreign exchange debt and CAD is a binding constraint on economic growth in Turkey. Econometric analysis suggests a robust positive association between capital inflows and economic growth in Turkey. A simulation found that a shock to capital flows in the form of a sudden stop would produce large fluctuations in output through both direct and indirect channels. Fewer capital inflows reduce the resources available for investment, and the currency depreciation associated with a sudden stop would deteriorate the balance sheets of firms with high foreign exchange exposure, reducing their net worth. Subsequently, investment and output would fall. This suggests a close relationship between capital flows and output in Turkey.

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27 Both a recursive vector auto-regression (VAR) model and an autoregressive distributed lag (ARDL) bound testing approach were used.
28 Kılınç (2006) finds that Turkish producers of both tradables and nontradables are financially constrained; nontradable sector investment is more sensitive to international capital flows; and there is a sizable currency mismatch in the nontradable sector. Therefore, exchange rate depreciations caused by sudden stops would profoundly impact balance sheets and thus the activity of nontradable firms especially.
3.2 Evidence on the Investment-Saving Relationship in an Open Economy: International Perspective

29. The previous section identified transmission channels for the low savings rate: the resulting lack of sufficient funds leads to less investment; appreciation of the domestic currency erodes competitiveness; and the building up of foreign exchange liabilities creates vulnerability in the economy, all of which constrain growth. It also showed the relationship between high current account deficits and growth. This section presents cross-country evidence of the saving-investment relationship. Given Turkey’s continued high need for investment, establishing a close positive relationship between saving and investment will underscore the importance of increasing domestic saving in Turkey.

30. Cross-country data suggest a positive association between domestic saving and investment. Although there is no consensus on the direction of causality between national savings and growth, a robust the association between national savings and investments has been found. Figure 17 displays scatter plots and the regression line between investment and saving rates from a sample of 104 developed and developing countries, averaged for 1980–2008. Two points deserve emphasis: First, there is a highly positive and significant correlation between investment and saving rates.29 Second, Turkey lies very close to the regression line, suggesting that its saving rate is typical for a country with its investment rate.

31. This study updated and extended the Blanchard and Giavazzi (2002) analysis to cover 104 countries, 68 of which are middle- and low-income countries. Blanchard and Giavazzi (2002) present evidence for the euro area and OECD countries showing that the close correlation between investment and savings might be weakening. The updated work shows that the relationship may be weakening after 1997. These coefficients, however, hide major differences in the relationship between savings and investment between developed and developing countries.

32. The close relationship between saving and investment (the Feldstein-Horioka puzzle) can no longer be observed in advanced countries. Figure 18 reports the coefficient on the investment-savings regression but differentiates high-income from middle- and low-income countries. For high-income countries (Figure 18, left panel), the result is striking: the decline in the regression coefficient since 1997 is pronounced, and by 2007 it had become negative. This finding is consistent with the view that in the short run saving and investment became perfectly decoupled in high-income countries.

29 The $R^2$ of the regression of average investment on average savings is 0.72; the coefficient of the regression is 0.63 with a standard error of just 0.04.
33. In developing countries, however, investment-saving association can still be observed albeit somewhat weaker than before.\textsuperscript{30} The right panel of Figure 18 shows the coefficient for middle- and low-income countries. Although it does decline substantially after 1998, it remains positive and statistically significant until 2007, with a point estimate value of 0.39. Although the Feldstein-Horioka fact seems to be less of a puzzle in advanced countries, it is still alive in developing countries, at least in the short run. If there is indeed a short-run causality from savings to investment, these results suggest that in developing countries policies to change domestic saving behavior may affect aggregate investment and therefore growth.\textsuperscript{31}

3.3 Attaining Sustainable High Growth: A Growth Accounting Perspective

34. Higher savings alone are not enough to promote sustainable growth. International evidence suggests that productivity may be the main driver of sustainable growth. The role of domestic savings in achieving sustainable high growth therefore cannot be considered in isolation from productivity growth. This section describes simulations which suggest that growth can only be feasible with a reasonable combination of savings and growth in total factor productivity (TFP).

35. Whether savings are allocated to productive activities depends on the quality of the financial system and public institutions in general. Without an efficient financial system, the best investment opportunities will not be matched with available savings (Levine, 2005). Likewise, without strong public institutions that guarantee economic stability and contract enforcement, for instance, accumulated capital may remain idle or be used ineffectively (Hall and Jones, 1999). These points to the importance of using physical capital, human capital, and labor efficiently in the production process.

\textsuperscript{30} Yentürk, Ulengin, and Çimenoğlu (2009) and Kaya (2010) are among the few studies that have investigated the association between savings and growth in Turkey.

\textsuperscript{31} See the background paper for this study by Hevia (2010) for details of the analysis.
36. A stylized model is calibrated to illustrate the link between national savings and economic growth in Turkey in various productivity growth scenarios. Two simulations are carried out (Table 1). Table 1.a is designed to measure the saving rate required to obtain a 4 percent growth rate in GDP per worker assuming no saving-investment gap. The second provides economic growth rates that can be attained for three different TFP growth rates if the national saving rate is fixed at 20 percent. Both simulations are dynamic in the sense that they follow the evolution of the economy for an extended period, here 25 years. This exercise clarifies the relationship between saving, productivity, and growth and reveals limits and possibilities for maintaining or improving economic growth in Turkey by using savings as a policy tool (see Havia, 2010 for the methodology and calibration of the model).

<table>
<thead>
<tr>
<th>Table 1. Simulations of Savings and Growth Rates, Various Scenarios</th>
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<tr>
<td><strong>a. Saving Rate under TFP Growth Scenarios (GDP per Worker Growth Rate = 4%)</strong></td>
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<td><strong>b. GDP per Worker Growth under TFP Growth Scenarios (Saving Rate = 20%)</strong></td>
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<td>25 Years</td>
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Source: Hevia (2010)

37. Simulation results imply that a reasonably high growth rate is attained only if there is a reasonable combination of saving and productivity growth. In a moderate TFP growth scenario, the required investment (capital accumulation) to achieve 4 percent per worker growth would require a 25 percent saving rate in the beginning and 31 percent over 25 years. In the high TFP scenario, where TFP growth increases to 2 percent, the necessary saving rates are much lower: 19 percent at the beginning and 14 percent at the end of the simulation period. But even in the high scenario, the saving rate would have to rise from its current level to attain growth of 4 percent GDP per worker - not far from Turkey’s own medium-term growth target. Alternatively, assuming a fixed 20 percent saving rate (Table 1.b) and 2 percent TFP growth, growth in GDP per worker is projected to be 4.5 percent over 10 years. This GDP per worker growth is significantly below the 2002-2007 average growth rate of 5.7 percent, which was
not sufficient to reduce unemployment rate below 10 percent. Rodrik (2009) has recently argued that an increase in domestic savings by nearly 10 percentage points is necessary to achieve growth rates that will absorb excess labor supply and reduce unemployment in Turkey.

38. **Further improving the investment climate in Turkey is crucial to promoting productivity growth.** Analysis of investment climate survey data confirms a significant association between the quality of the investment climate and productivity. Productivity analysis shows that almost one-third of the variation in the performance of the business sector in Turkey is explained by investment climate factors. Among these factors, the regulatory environment is the area with the largest relative contribution to productivity. Other relevant investment climate areas include infrastructure bottlenecks, access to finance and corporate governance, the availability of skilled labor and innovation.

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32 Pressures from a growing labor supply and sectoral transformation were instrumental in keeping unemployment sticky. In this period, average TFP growth was close to 2 percent.

33 For a detailed discussion of reforms, see World Bank Turkey Country Economic Memorandum, Informality: Causes, Consequences, Policies (2010).