TURKEY

SELECTED ISSUES

April 2016

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INTERNATIONAL MONETARY FUND

TURKEY

SELECTED ISSUES

Approved By

European Department

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PRIVATE SAVINGS IN TURKEY—DEVELOPMENTS AND POLICY OPTIONS[1]

## A. Introduction and Analysis of Developments

Developments

1.   Over the last decade and half, Turkey successfully stabilized its macro economy. In the aftermath of the 1999–2001 economic crises, the country pursued a highly successful policy of macroeconomic stabilization. Public sector consolidation increased the primary surplus to over 7 percent of GDP at its peak in 2004, reducing public debt from 90 percent of GDP in 2001 to 33 percent in 2015. Inflation decreased from close to 70 percent annually to single digits. The economy grew fast, by almost 7 percent on average between 2002–07 and close to 5 percent on average between 2002–15.

2.   At the same time, however, the private sector saving rate decreased significantly, leading to a current account deficit. While the private sector saving rate averaged 18 percent over 1998–2003[2], it dropped to 9 percent in 2013 and has stayed below 13 percent since 2010. The decrease in the saving rate was particularly pronounced in the years since 2003. Meanwhile the public saving rate stands at around 3 percent, while the investment rate increased from around 17 percent in 2002 to 20 percent in 2014. Thus, domestic savings, private and public, no longer covered investment, opening up a large gap between savings and investments and hence a current account deficit.
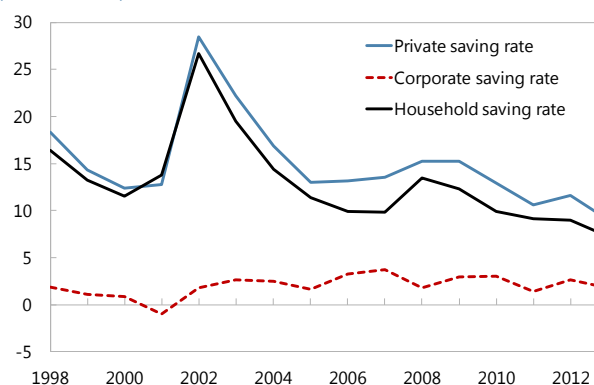
Domestic Saving
(Percent of GDP)
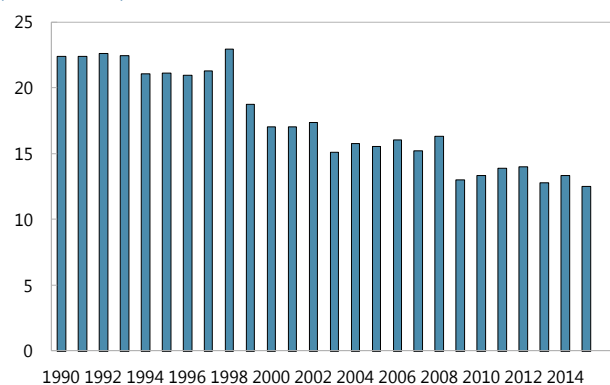
Source: IMF, WEO.

Saving Rates
(Percent of GDP)

Sources: CBRT; IMF, WEO; and IMF staff calculations.

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[1] Prepared by Alexander Tieman.

[2] These were years that included significant economic crises. In response, the savings rate fluctuated between 12.4 and 28.5 percent in this period.

3.   The current account deficit is high and financed by ample capital inflows. Between 2010–15, the deficit averaged over 6½ percent of GDP. Ample capital inflows, intermediated by the financial sector, and financial deepening, eased credit constraints and led to rapid growth of private sector credit and consumption. Hedged external wholesale foreign currency borrowing by the banking sector has become a key feature sustaining loans growth, and corporates net foreign exchange liabilities have risen to US$176 billion at end October 2015.
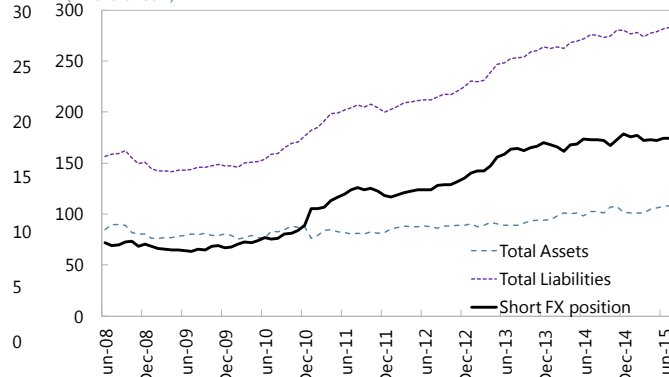
Saving -Investment Gap
(Percent of GDP)
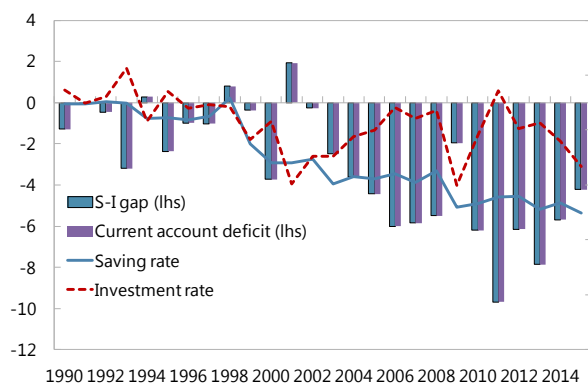
Source: IMF, WEO.

Foreign Exchange Exposure of the Non-Financial Corporate Sector
(Billions of USD)

Source: CBRT.

4.   These trends point to the external vulnerability of the Turkish economy and may ultimately prove unsustainable. Staff projects that the current account deficit will remain in the 4 to 5 percent of GDP range on current policies. Reflecting in large part the large share of short-term external debt, gross external financing requirements will continue to exceed a quarter of GDP per year. Turkey's net foreign asset position, which has already deteriorated by about 25 percent of GDP since 2008, will deteriorate further. Recent IMF analysis (IMF, 2016) suggests the current account deficit is about 1–2 percent higher than warranted by medium-term fundamentals and desirable policy settings.

International context

5.   The current Turkish saving rate is low in international comparison. Comparing the Turkish saving rate internationally shows it is considerably below the world wide average. Even when comparing to regions in the world with relatively low saving rates, such as Europe and Central Asia, sub-Saharan Africa or Latin America, Turkey stands out as having a saving rate that is lower still. Comparing Turkey to other countries by income level shows a similar picture. The domestic saving rate is well-below the average of upper middle income countries. Moreover, in other middle income countries, on average, the saving rate increased over time. Turkey hence stands out not only for the level of its saving rate, but also for the decline its saving rate shows.

Saving Rates by Region
(Percent of GDP)
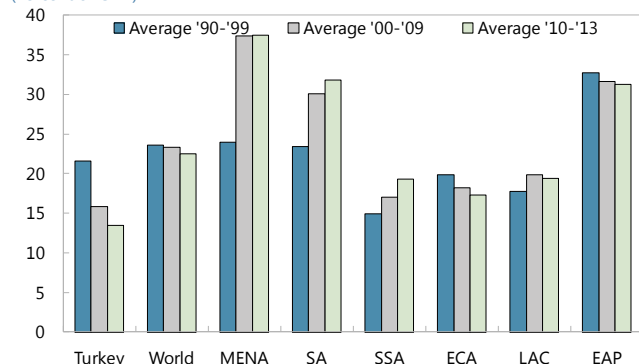
Sources: Worldbank, WDI; and IMF, WEO.
Note: MENA = Middle East and North Africa; SA =South Asia; SSA =Sub-Saharan Africa; ECA =Europe and Central Asia; LAC =Latin America and Caribbea ; EAP =East Asia and Pacific.

Saving Rates by Transition, Takeoff Countries
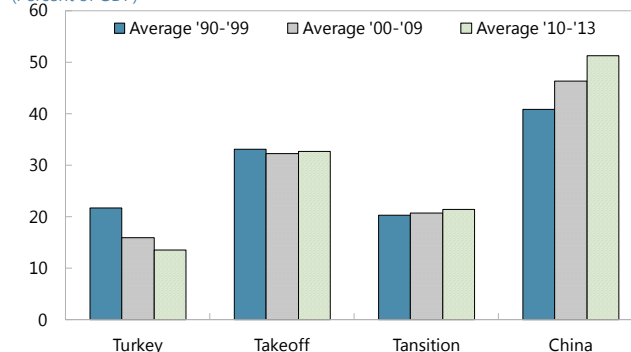(Percent of GDP)

Sources: Worldbank, WDI; and IMF, WEO.
Note: The transition countries in our sample are Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania,Poland, Romania, Slovak Republic, Slovenia, Turkmenistan, Ukraine, and Uzbekistan. The group of takeoff countries includes China ; Chile; Hong Kong, SAR China; Indonesia; Korea; Malaysia; Mauritius; Singapore; Taiwan, China; and Thailand.

6.   Maybe the most interesting international comparison is with other emerging market.
Here we follow the World Bank (2011) and distinguish between take-off countries that have achieved high and sustained growth rates between 1980 and 2008 and transition countries that had generally seen a collapse in saving during their 1990s transition.[3] This comparison shows the Turkish saving rate to be modestly below with that of transition countries, but far below that of take-off countries, let alone China. In addition, the Turkish saving rate is decreasing, whereas take-off countries on average show a slight increase in saving over time.

Saving Rates by Income Group
(Percent of GDP)
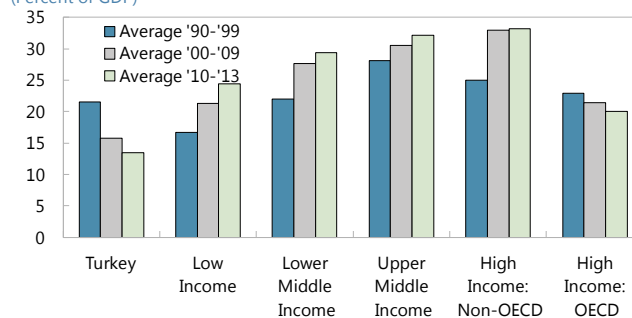
Sources: Worldbank, WDI; and IMF, WEO.
Notes: Low-income economies are those in which 2013 GNI per capita was $1,045 or less. Middle-income economies are those in which 2013 GNI per capita was between $1,046 and $12,745. High-income economies are those in which 2013 GNI per capita was $12,746 or more.

This paper

7.   The aim of this paper is to provide policy options that would raise the private sector saving rate in Turkey. To do so, it first briefly reviews some of the literature on private savings in order to gauge different savings motives and possible causes of the drop in the saving rate. The paper does not aim to empirically test these different explanations, but reports on others' findings. Subsequently, the paper presents policy options. The various options are discussed in terms of feasibility, contribution to increased savings, and potential positive or negative side effects (externalities). Importantly, the paper does not discuss issues related to the monetary policy framework and stance. While these issues are certainly directly relevant for private sector savings, they are extensively dealt with in IMF (2015, 2016).

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[3] China qualifies as a take-off country but as its extremely high saving rate would distort the average, it is treated separately here.

8.   The paper does not aim to come up with a single best policy. Rather, it is best seen as presenting a menu of policy options. These are not mutually exclusive and in some cases can be mutually reinforcing. A full impact analysis is beyond the scope of this paper. It is up to the authorities, possibly in cooperation with the World Bank, to study the impact of the various options presented and, taking account of possible side benefits or detriments, implement the best combination of policies to raise the saving rate.

B.   Factors Explaining the Private Sector Savings Rate

9.   Several macroeconomic factors are generally acknowledged to play a role in the savings decisions of the private sector. They include public saving, the real interest rate, and inflation. Under the permanent income hypothesis, higher public saving is linked to a decrease in private saving through Ricardian equivalence: as private agents expect lower future taxation or higher transfers, they hence need to save less to keep with the same level of future consumption. Higher real interest rates make delaying consumption more attractive by benefitting saving and punish borrowing. Through this substitution effect higher interest rates can be expected to increase savings. In an economy with many poor households, the effect may be less visible, as poor households' consumption is near subsistence level and hence cannot be decreased to allow room for saving. In addition, an income effect may also be in play, as lenders will increase their income, while borrowers will see their income decrease. Inflation is often seen as a proxy for uncertainty. Volatile and high inflation increases uncertainty about future income, and would suggest an increase in precautionary savings. However, inflation also presents uncertainty about the future value of savings, decreasing incentives to save. Instead, agents may want to invest in long lasting assets such as land, housing, or durables.

10.   In the Turkish experience with savings rate, specific factors may have played an important role. These include, the macroeconomic stabilization that took place post-crisis (increased public saving, low and stable inflation and interest rates), a stable banking system that made consumer credit widely available to the general public for the first time, growth and wealth effects, and demographic developments. This paper does not aim to empirically test the importance of these different contributing factors. However, we will discuss these factors briefly below, selectively citing empirical results of other authors.

11.   The macroeconomic stabilization that took place post–2001 may have influenced private savings in several ways. First, one can expect a reduced need for precautionary savings as a consequence of reduced economic uncertainty. Partly this can be seen as a form of Ricardian equivalence, where higher public saving leads to the expectation of lower future taxation and hence a lower saving need for the same level of future consumption. However, the effects of economic stabilization can be seen more broadly. Lower inflation and real interest rates implied a greater ability to borrow externally and attract increased foreign direct investment. In addition, the provision of essential services such as health care and education improved, further reducing the need for precautionary savings.

12.   At the same time financial development and deepening took off. The banking system was restructured and, from its now stronger position, started to supply credit, thus easing liquidity constraints. To the extent that financial deepening simply allowed economic agents to reach their desired level of leverage, theoretically the effects on the saving rate should be transitory. I.e., the saving rate should revert back to where it was once the new steady state leverage is achieved. However, empirically, it is not clear whether agents behave in this way, or what the desired level of debt is. Taken together, macroeconomic stabilization and financial development implied that more resources became available in the economy, some of which were employed to provide credit and hence *crowd in* the private sector.

13.   In combination with other economic policies, the stabilization triggered strong economic and productivity growth. Productivity growth raises household income. This implies that the income for each cohort in the population will be larger than that of the cohort before it. Assuming a two generation economy, the young generation—which is in the savings phase of the life cycle—enjoys higher income than the old generation in the dissavings phase of the life cycle. Hence, assuming the generations maintain the same saving rate—in order to be able to enjoy the same share of life time income for consumption in retirement—the average private saving rate will increase in a growing economy. In the literature this is known as Modigliani's (1970, 1986) *aggregation effect*. Productivity growth also implies households can look forward to higher future—and hence lifetime—income. In anticipation of this higher future income, households will consume more in the current period. This *human wealth effect* (Tobin, 1967, Caroll and Summers, 1991) would hence imply a lower saving rate. With these two effects in play, link between productivity growth and private saving is an empirical question. And even though cross-country empirical evidence finds a fairly robust positive link between growth and saving, the same studies also suggest the conditions under which the aggregation effect does not occur in practice (Deaton and Paxson, 1994, 1997, 2000). Hence the empirically established positive correlation between growth and saving is difficult to reconcile with standard theories of savings.

14.   Turkey is undergoing a demographic transition. It features a relatively large young population (49 percent of the population is under 30 years old) and a modest number of pensioners (just 8 percent of the population is over 64 years old, and an additional 3.7 percent of the population is aged between 60 and 64). Thus the youth dependency ratio is relatively high, while the old-age dependency ratio is low. As fertility has decreased and longevity increased, the country is undergoing a demographic transition. The youth dependency ratio is decreasing gradually over time, while the old-age dependency ratio has started to increase. A reduction in the youth dependency ratio is generally associated with an increase in the household saving rate, as overall spending on the fewer children around will decline. In addition, parents can no longer rely on children supporting them in old age, prompting the need for additional retirement savings. Conversely, an increase in the old-age dependency ratio implies more people are living off their retirement savings, which implies a decrease in the saving rate. In the interim period when the youth dependency ratio is falling fast and the old-age dependency ratio is only increasing modestly, the country enjoys a demographic dividend, consisting of a larger potential labor force and higher private saving to fund investment.

15.   Other demographic factors influencing the private saving rate include migration from the country side to the cities and an increase in female labor participation. Between 1980 and 2015, urbanization in Turkey increased rapidly. Urbanization is found to influence the propensity to save mainly through the precautionary savings channel. People in rural areas tend to hold larger precautionary savings than urban dwellers, which is directly related to the generally better availability of government health and other social services in urban areas, and the generally higher income volatility in the (rural) agricultural sector. Hence urbanization can be expected to lower the private saving rate. In tandem with urbanization, female labor participation increased rapidly since 2006, albeit from a low base. This would be expected to raise the saving rate, as households with both partners working generate more income and are able to accumulate more financial wealth over time.

Urbanization
(Percent)
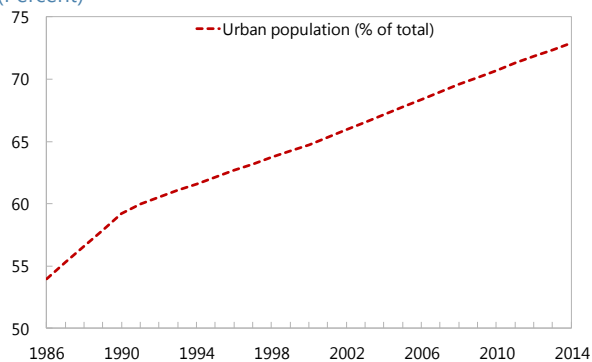
Source: WDI.

Female Labor Participation
(Percent)
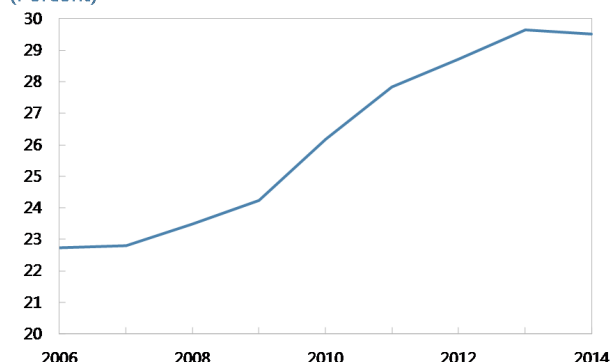
Source: Eurostat.

16.   Non-financial wealth accumulation may also influence financial saving decisions. For Turkey, non-financial wealth in the form of home and land ownership and gold are likely relevant factors. Households owning their home or land may see this as a substitute for financial savings. Specifically, a house may be seen as an asset that can provide income in retirement, either by renting the property or selling it for a lump sum. Thus home ownership can be expected to lower a household's propensity to save. Still, such a wealth effect should ease over time, suggesting the saving rate should increase again over time. In addition, Turkish households traditionally invest some of their savings in gold, and the number of Turks that report gold savings doubled to almost 25 percent of respondents in the three years to 2015 (Hurriyet, 2015). While the exact volume of these savings is not know, external sector statistics suggest that on average, the country imports more gold than it exports, adding to the stock. As with other non-financial wealth, gold stocks may be seen by the households as a partial substitute to financial savings, hence lowering the private saving rate.

17.   Which of these factors has been dominant in Turkey in the recent era? Given the myriad different economic links discussed above, this question can only be answered empirically. Van Rijckeghem (2010), Van Rijckeghem and Ucer (2009), IMF (2007), Pirgan, Sabauncu, and Bahceci

(2012), and World Bank (2014) represent the most prominent empirical studies trying to explain the post-crisis drop in the private sector saving rate in Turkey. In its recent public finance review, the World Bank (2014) examines household saving behavior in detail. Using Turkish household budget survey data, the study shows that an increase in female labor participation increases a household's saving rate, the precautionary saving motive is strong, and increases in home ownership lead to a temporarily lower saving rate. The study IMF (2007) employs regression analysis on (inflation-adjusted) macro saving data from 1980 to 2005, and concludes that public saving, growth, and inflation are the key determinants of private saving. It argues that these results suggest that the lower private saving rate chiefly reflects improved economic stability, a notion also supported by World Bank (2014). Van Rijckeghem (2010) and Van Rijckeghem and Ucer (2009) employ macro regressions on data from 1998[4] to 2007, supported by analyses of household budget survey data. These studies support the conclusion that economic stabilization and a reduction in uncertainty (inflation) have been important, but in addition find a prominent role for credit availability and financial deepening. In addition, they find that demographic changes in Turkey should have led to an increase in the saving rate, and that, going forward, further demographic change will be at best neutral for the private saving rate. Ozcan, Gunay and Ertac (2003) study earlier 1968–1994 data, and conclude private savings behavior exhibits strong inertia and find a positive effect of inflation on savings ascribed to the precautionary motive. They do not find support for Ricardian equivalence or macroeconomic stabilization as factors influencing private saving, which may, however, be an artifact of the period under study. Pirgan, Sabauncu, and Bahceci (2012) empirically test for Ricardian equivalence on more recent data. While they find some evidence of partial Ricardian equivalence, they nevertheless conclude that fiscal policy does not have a prominent role to play in increasing domestic savings.

18.   Hence, while many factors seem to play a role in explaining decline in Turkey's private saving rate, not all of these explanation are consistent with the speed with which decline took place. The fast drop in the saving rate the years directly following the 2001 crisis suggest that the rapid implementation of a thorough macroeconomic stabilization program may have played a large role. The more gradual, but still fast, decline thereafter is consistent with rapid financial deepening, primarily through bank credit becoming available to a large proportion of households. Demographic trends may also have played a role on the margin, but by their nature they materialize slowly over a longer period of time.

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[4] The authors chose to start in 1998, as there is a break in the series due to national accounts revisions in 2007, in which only the series up to 1998 were retroactively revised.
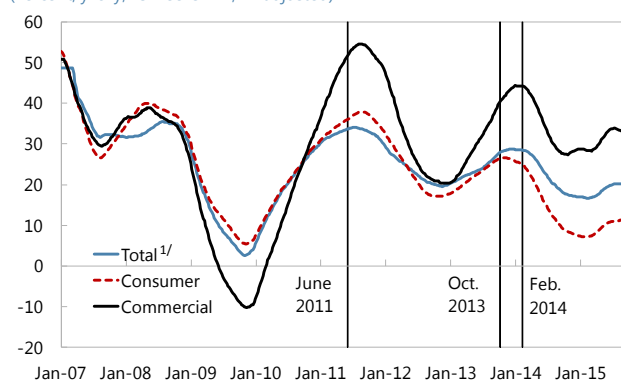
C.   Policy Options

19.   Raising the low private sector saving rate is the preferred way to reduce the current account deficit, and thus Turkey's external vulnerability. To increase the domestic saving rate, either the public or the private savingsrate (or both) would have to rise. The public saving rate is equivalent to the budget balance of the overall public sector, discussed extensively in IMF (2014). Analysis in the same report shows that increasing the private saving rate delivers better macroeconomic outcomes than focusing purely on increasing public savings. Of course the nature of private savings implies that, in contrast to public savings, it is not under the direct control of the authorities. Nonetheless, policies can be devised that influence the private sector's saving behavior and thus work towards raising private saving. Such policies can have further positive effects besides reducing the external vulnerabilities (such as improving labor market efficiency or reducing old age poverty). For the sake of this paper, these effects are seen as positive externalities, and will be discussed only briefly. Below, we divide the policy measures into two distinct categories, based on whether they target a decrease in credit growth (dissaving) or an increase in actual gross saving.

Measures to slow down credit growth

20.   Since 2001, credit growth in Turkey has been volatile. It has also been high, even when adjusted for inflation. As discussed above, this is partly a consequence of macroeconomic stabilization and the availability of consumer credit that came with a stronger banking system which focused more on the retail sector. It represents financial deepening, which comes naturally with increased wealth and should be seen positively.

Credit Growth
(Percent; y-o-y, 13 weeks MA, FX adjusted)

1/ includes consumer, commercial and other credits
Sources: CBRT; Haver Analytics; and IMF staff calculations.

21.   However, the pace of credit growth raises two issues particularly relevant for Turkey. First, fast credit growth reduces net saving. This directly worsens the saving-investment imbalance, and hence increases its current account deficit. Second, fast credit growth may negatively influence credit quality. Cross country evidence (e.g., Kelly, McQuinn and Stuart, 2013, or Fernandez de Lis, Martinez Pages and Saurina, 2000) suggests that excessive credit growth is often associated with credit quality problems down the line. This is as such rapid increases of credit present quantitative and qualitative challenges to the credit scoring systems banks employ. The quantitative challenges simply amount to not having enough qualified and experience personnel to thoroughly probe credit applications, while qualitative challenges are related to data covering only benign periods of economic expansion. The result is that often credit quality deteriorates much faster than expected when the economy enters a downturn.

22.   In response, the authorities employed various macroprudential tools to slow down credit growth. The choice for macroprudential measures over raising policy interest rates was driven by considerations that higher interest rates may attract capital inflows, and hence increase external vulnerabilities. The macroprudential measures were primarily geared at preserving financial stability, by targeting a slower, more sustainable pace of financial deepening. Macroprudential measures taken since 2010 are summarized in the appendix of IMF (2016).

23.   The measures have successfully slowed down retail credit growth. Retail credit growth started to slow down shortly after the introduction of the main macroprudential measures targeting this market segment (marked in the credit growth figure above). Considering the structurally above-target inflation in Turkey, the current nominal growth rate of 10 percent translates into a real retail credit growth rate of just 3 percent, in an economy that is projected to grow by 3 percent this year. Hence financial deepening on the consumer side virtually came to a halt.

24.   Corporate credit growth, however, has remained relatively high at 30 percent on an annual basis, but seems to have decoupled from investment. Credit to the corporate sector is generally seen as positive for the real economy, as long as it is invested and hence serves to boost growth (potential). The authorities believe corporate credit growth supports the economy and therefore are not currently considering measures to curb it. In fact, they have taken measures to support corporate credit growth to the SME segment in particular. However, while domestic corporate bank credit growth increased to over 40 percent year on year in 2013–14, the investment rate remained broadly flat at around 20 percent of GDP. In other words, the link between the increase in the absolute amount of additional corporate credit and the absolute amount of new investment that emerged from the data over the period 2004–10 seems to have changed. If not used for investment, it remains unclear towards which spending purposes the additional volume of corporate credit has been channeled since the link broke down in 2013.


Real Corporate Credit Changes and Investment
(Billions of TL at 1998 constant prices)

Changes in corporate credit (lhs)
Private investment (annualized; rhs)

Sources: CBRT, and TurkStat.
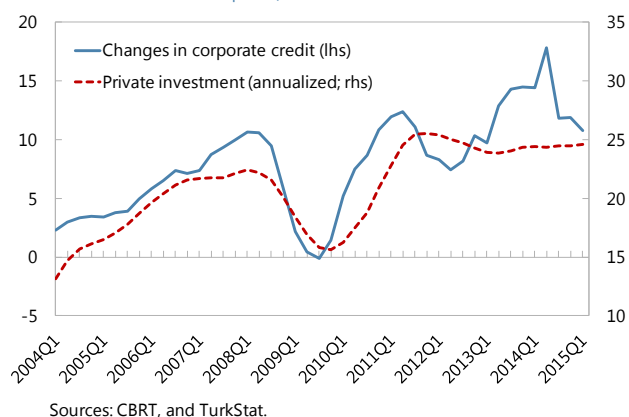
**25.   As with retail credit, the high volume of corporate credit growth year after year may
yet result in decreasing credit quality
in a downturn or slow growth
environment.** In such a scenario, specific
economic sectors may be affected more
than others. For instance, cross country
experience suggests that after a number
of years of good economic growth, the
construction sector specifically often
suffers heavily in a prolonged downturn.
Given that banks' exposure to this sector
has increased rapidly over the last
decade, it may therefore make sense to
consider further macroprudential
measures targeting this economic sector
in particular.

Construction Sector Loans
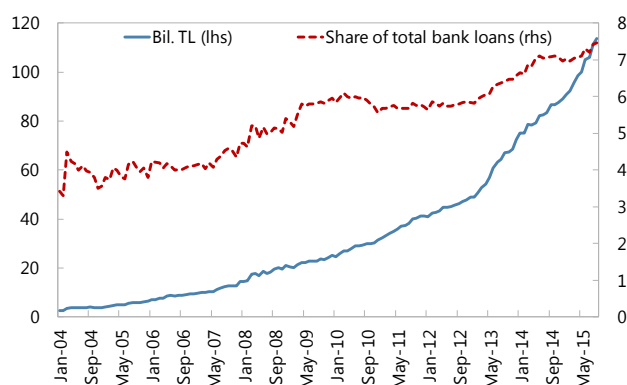
Sources: BRSA; Haver Analytics; and IMF staff calculations.

26.   Therefore, it is important to identify emerging risks in the corporate credit segment.
Risks in specific parts of the corporate sector can be assessed by looking at the general health of
economic sectors as well as developments in cash flow, leverage, credit, and exposure to interest
rate and exchange rate risks. Assessing economic sectors can be done using standard metrics such
as profitability and price and cost developments. More profitable industries that face little pressure
on margins present less credit risk than industries with low or volatile profitability. In addition, one
can look at the prospects for specific economic sectors going forward, given the overall
macroeconomic developments. Cash flow analysis on the level of individual large corporates in
certain sector gives and idea of liquidity in this sector, while leverage is an indicator of loss-
absorption buffers present in the sector. Credit growth itself is another risk indicator, as discussed
above. Finally, the exposure to interest rate risk and exchange rate risk (of an economic sector or
individual corporates) is important to get an idea of a sector's robustness to shocks. Loans with
short duration (variable rates or short maturity) or foreign exchange loans increase liquidity and
solvency risk.

**27.   Were elevated risks from strong credit growth to be found in corporates in certain
economic sectors, the authorities may want to consider prudential or macroprudential
measures for corporate credits**. These could be general, or could be targeted to specific parts of
the corporate sector where risks are found to be elevated. Such measure could entail a mix of
options. A prime prudential instrument is to increase risk weights, either for corporate credit as a
whole or for specific segments of the corporate sector. Macroprudential measures for corporate
loans could be modeled on the successful measures employed to slow down credit to the
household sector. Such measures could include providing guidance on implicit nominal credit
growth targets, increasing provisioning, or introducing debt service limits or limits on credit
maturity. Consideration should be given to differentiate the measures between credit in Lira and
credit in foreign exchange, as the risks differ between these types of credit.

28.   Recently introduced policies to provide incentives for equity financing for the non-financial corporate sector will also work in the direction of containing debt finance. A new notional interest deduction for cash capital increases came into effect in mid 2015. Accordingly, the balance between tax-deductible interest on debt finance and taxable profits on equity finance has shifted in favor of equity finance. While the exact magnitude of the shift will remain unclear for some time, certainly less debt finance will imply lower corporate credit growth. Whether this measure will increase the overall corporate saving rate is unclear though.

29.   (Macro) prudential measures would be relatively easy to introduce and could quickly have a significant impact. A reduction in corporate credit growth of 10 percentage point per year (i.e., from the current level of 30 percent to 20 percent) would, ceteris paribus, contribute some 0.7 percentage point to the private saving rate. To the extent that corporate borrowing seems to have decoupled from investment over the last few years, a moderate reduction in corporate credit growth may not have large real effects. However, over the medium-term, it seems likely that the historically strong link between corporate borrowing and investment would still apply. Hence restricting corporate credit growth in general may have negative effects on GDP growth as well as potential future growth. For these reasons, measures targeted at specific segments of the corporate sector where risks seem elevated may be more suitable. In addition, a gradual introduction of such measures would allow for calibration along the way, depending on the actual observed impact on credit and growth.

Measures to increase savings

30.   Increasing the gross private saving rate presents another way to increase private savings. This can be done in many ways. Here, we focus on three related possible policy areas: pensions, severance pay and subsidized savings.

Pensions

31.   The pension system in Turkey consists of a large first pillar, a small second pillar and a modest but growing third pillar. The first pillar encompasses pay-as-you-go (i.e., unfunded) social security benefits. Participation is mandatory and collection and administration are done by the government through the social security institution. The second pillar consists of pension foundations in some private companies. Employees in these companies automatically participate, but participation could be noncontributory for employees, and funding from the employer is often in the form of (supplementary) dividend payments to the foundation. Such foundations cover only a small fraction of Turkish employees. In addition, some companies feature unfunded book reserves for pensions. The third pillar consists of voluntary pension accounts, introduced in 2003. Employer contributions to the third pillar are tax deductible up to 15 percent of gross salary, capped at the minimum gross wage. Initially employee contributions benefitted from a tax advantage, but in mid 2012 the tax advantage was replaced by a (capped) government matching contribution of 25

percent of investment[5]. Capital gains in the third pillar are taxed at 5 percent at retirement or 10 (more than 10 years contribution) or 15 percent (less than 10 year contribution) in case of early withdrawal.

32.   The funded third pillar currently contributes some 2 percent of GDP to savings and may have boosted the private saving rate by as much as 0.3 percentage points. Third pillar

pension funds have grown fast, especially since the introduction of the government matching contribution in 2012. Between mid 2012 and October 2015, the amount of funds invested in third pillar funds has more than doubled to a total of TL42 billion (or 2 percent of GDP). Eren and Genç-İleri (2015) find that the introduction of the third pillar pension system may have boosted the net saving rate by almost 0.3 percent of GDP, and increased the capital stock by some 15 percent. Over the same period, the number of participants also steadily increased to now close to 6 million.

Third Pillar Pensions
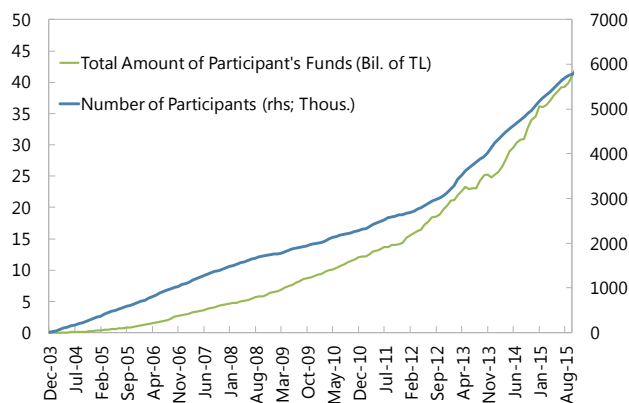
Source: Pension Monitoring Center.

33.   The current pension system is too generous. In international comparison, the replacement

rate is high and the retirement age is low (OECD, 2006). While reforms to both have been put in motion, the transition periods are lengthy, and the end goals are modest. The reduced replacement ratio, in effect for people entering the pension system after 2008, remains well-above OECD averages for both women and men (Figure 1). Meanwhile, the minimum age at which employees can become eligible for a pension increases only slowly, to reach 65 by 2043. Overall this implies that the current system is very generous, and it will take a long time for this to change. These generous incentives to retire early have negatively impacted the employment rate for older workers.

Employment Rate for People Aged 55-64
(Percent)
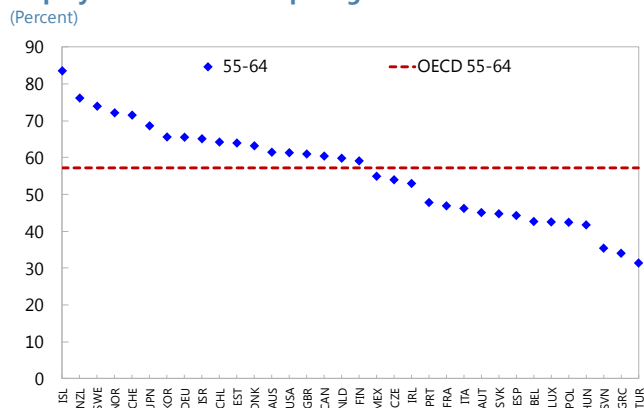
Source: OECD.

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[5] While participants can save unlimited amounts in their pension account, the government contribution is capped at 25 percent of the minimum wage.

Figure 1. Replacement Rates in International Comparison

Figure #. Net Replacement rates: International Comparison - Male

Figure #. Net Replacement rates: International Comparison - Female

Source: OECD.
Note: Net pension as percentage of pre-retirement earnings.

Source: OECD.
Note: Net pension as percentage of pre-retirement earnings.
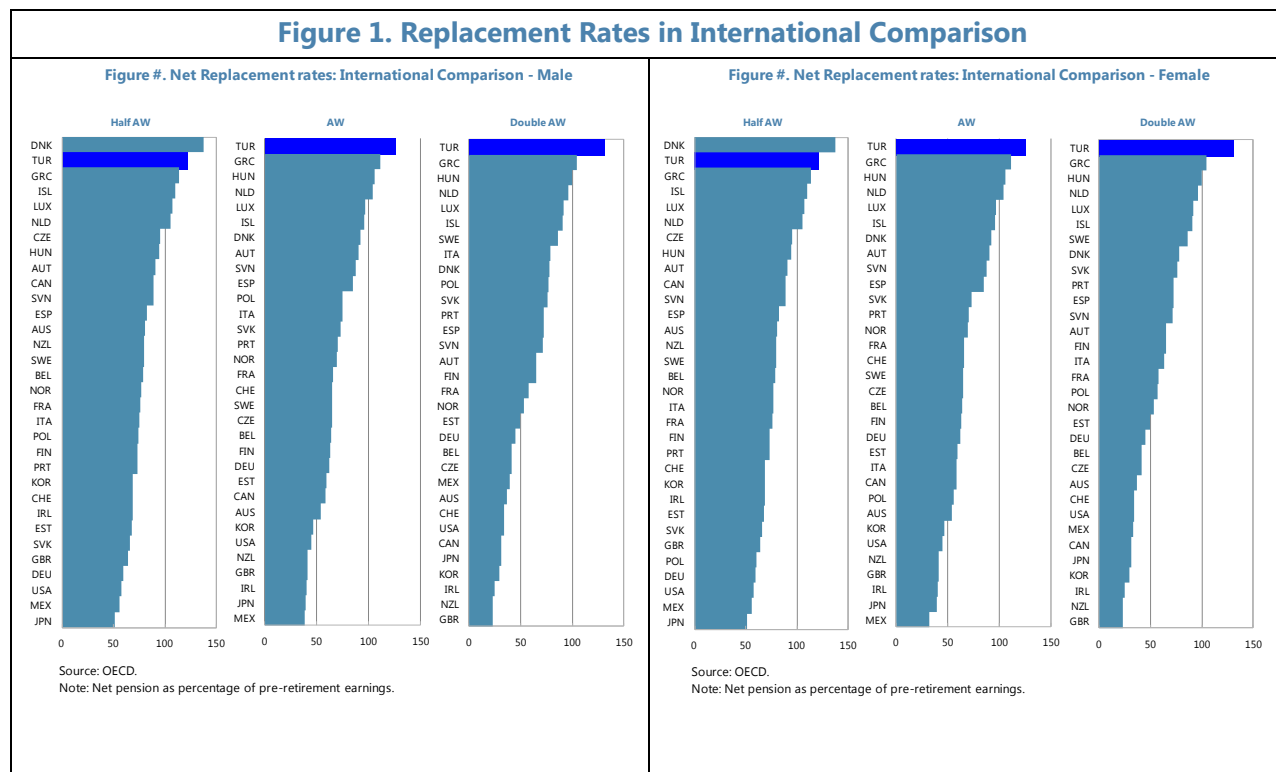
34.   Revamping the second pillar would raise savings while simultaneously contributing to pension system sustainability and capital market development. A funded system implies that individuals save for their own retirement. This can be done through individual accounts or collectively, and through defined contribution of defined benefits systems. A defined contributions system using individual accounts is per definition sustainable as pension benefits are paid from accrued pension savings. In contrast, collective defined benefit systems feature some elements of risk pooling. As such systems are not per definition sustainable, the challenge remains to keep (projected) benefits in line with (projected) assets, taking account of developments in, e.g., longevity. A benefit formula based on conservative return projections and taking account of longevity makes for a sustainable fund, while retaining risk sharing features. Saving in a funded system would boost domestic savings. Over time, it would result in large pools of institutionally-managed money available for investment through the domestic market. In fact, in order for a pension fund to yield economic benefit, the investment role is crucial.[6] This provides incentives for the development of the local capital market, which should serve to improve the allocation of capital more broadly in the economy.

35.   Given Turkey's relatively young population, now is the time to start funding the pension system. With 32½ percent of people under the age of 20, Turkey has a young population,

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[6] While there may be other benefits of having such funds, a second pillar fund that invests solely in government bonds yield negative economic benefits after fees compared to straightforward lowering of government debt through a first pillar system.

but fertility rates have decreased sharply over time. The country is hence enjoying a demographic dividend, with many people of working age (68 percent of the population), while the young dependency ratio is falling and the old age dependency ratio is not yet increasing much, as only 8 percent of the people are aged 65 and older. This dividend present an opportunity to save in anticipation of population aging that will inevitably follow if these demographic trends persist. Given their role in providing income into old age, pension savings are generally seen as an appropriate vehicle.

36.   **Peer country experience suggests that the introduction of a second pillar pension system could yield several percent of GDP in additional private savings**. It is beyond the scope of this paper to fully quantify an actuarial pension model for Turkey. Instead, we look at some peer countries that have successfully reformed their pension systems, and the boost to private savings these countries subsequently experienced. While many countries have reformed their pension systems in various ways, the examples of Chile and Mexico stand out as useful peer comparisons with Turkey. Chile, as it pension reform in the early 1980s is generally seen as the first in the big wave of countries reforming their systems. As such, it is now arguably the most mature system among the countries that have reformed, and is often held up as an example. Mexico presents a good peer as its economy is in a similar stage of development as Turkey. It is a solidly middle income country, with a diversified economy, and a large advanced economy in close proximity as its main trading partner, which started a broadly successful transition to a funded pensions system in 1995. Some of the features of both systems are described in Box 1, while the figure in the box illustrates the development of the private saving rate in both economies.

37.   **The authorities are working towards gradually introducing changes to the pension system**. Expanding a pilot program of auto-enrollment of new employees into a funded pension system is on the agenda. Other changes would increase the focus on long-term investment, and include a reduction in overall costs of administration and management. Simplification of the regulatory and supervisory frameworks and the creation of well-designed default options for employees and employers are also among the goals. Such reforms would all go in the right direction. In the end, however, the intricacies of the actual design of both the accumulation and the payout phases are what will determine the long-term effects of the reforms on the private saving rate. Over the medium-term, the design of the transition phase is crucial.

38.   **Of course there are many design and transition-related issues that would need to be dealt with**. Any pension claims should be transferable, in order not to decrease labor market flexibility. Beyond that, some of the most important question with respect to the design of the system would include: What will the eligibility criteria and criteria for withdrawal be? What is the contribution rate? What incentives, if any, through the tax system or otherwise, will the government provide for participation? What will the benefit formula look like? How will it take account of the length of contributions and expected future changes in longevity? Who will manage the funds, how will the mandate to manage the funds be allotted (e.g., competition in the market vs. competition for the market), and what will the fee structure be? Transitional issues that need to be decided include how to treat workers that will not be in a position to build up a full pension under the new

system (and have built up right under the existing system), as well as the financing of such transitional arrangements. In the case of Turkey, some of the subsidies currently paid under the third pillar voluntary savings scheme—which disproportionately accrues to higher income earners who participate most in the scheme—could be redirected to finance part of the transition to a funded second pillar. Many of the key design considerations were discussed with authorities and are contained in Impavido et al. 2010.

39.   More broadly, one would need to integrate the second pillar with the first and third pillars. The introduction of a funded second pillar would serve to alleviate pressure on the unfunded first pillar pension system. Hence it would create further room for parametric reform of the first pillar, gradually transferring this pillar toward a basic pension income or solidarity payment. Over the longer term, this would serve to shield public finances from some of the pension expenditure-related consequences of population aging. At the same time, the need for a voluntary third pillar diminishes. While the system could be maintained, government contributions incentivizing third pillar savings could hence be scrapped or reduced, and (some of) the current outlays could be employed towards incentivizing second pillar savings.

Box 1. Pension Reform In Selected Countries

Mexico and Chile present two examples of countries that have successfully transitioned from pay as you go to funded pension systems. Both countries feature individual accounts and private management of pension assets.

Mexico

In the 1990s, Mexico faced demographic trends similar to those Turkey is facing today. It saw a decrease in the fertility rate and an increase in life expectancy, leading to slower population growth. At the same time, it led to a decrease in the youth dependency ratio, and initially the old age dependency ratio. However, in the 1990, Mexico's old age dependency ratio was already increasing rapidly.

Mexico introduced a three pillar pension system in 1997 for private sector employees. The first pillar consists of a minimum guaranteed pension equivalent to the indexed minimum wage for low-income workers. This pillar also included a severance pay component. The second pillar is a fully-funded mandatory system of (defined contribution) individual savings accounts with competitive mutual fund management, while the third pillar consists of a voluntary savings account. Public sector employees only started to transition into the new system in 2007.

Mexico: Pension Assets under Management
(Millions of Mexican Peso)
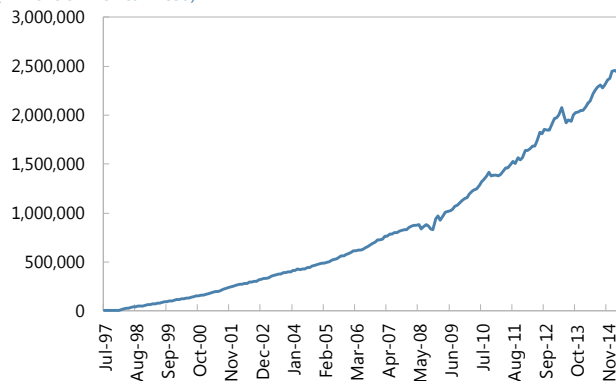
Source: CONSAR, Mexican pension regulator.

Box 1. Pension Reform In Selected Countries (concluded)

Contributions for the system were set at 8½ percent of earnings, covering both pensions and severance pay. These contributions consisted of 6½ percent of earnings for the joint first pillar pension and severance system, split between the employer (3.15 ppt), the employee (1.13 ppt) and the government (2.22 ppt), and a separate 2 percent of earning contribution paid for by the employer to fund the employee's individual savings account under the second pillar.[1]

The impact of these reforms has been a pronounced increase in the private saving rate. The average saving rate post-reform rose to almost 19 percent of GDP (1998–2015 average) from a little under 15 percent of GDP on average (1976–1996) prior to the reform. Meanwhile, assets under management rose steadily, at a pace of over 16 percent annually since 2005, and have now reached almost 14 percent of GDP.

The overall impact on the national savings rate has been more modest. Taking account of the decrease in public savings to partly finance the transition deficit, as well as the interaction between public and private saving, Villagomez and Anton (2013) estimate that the pension reform raised the national saving rate by about 1 percentage point.
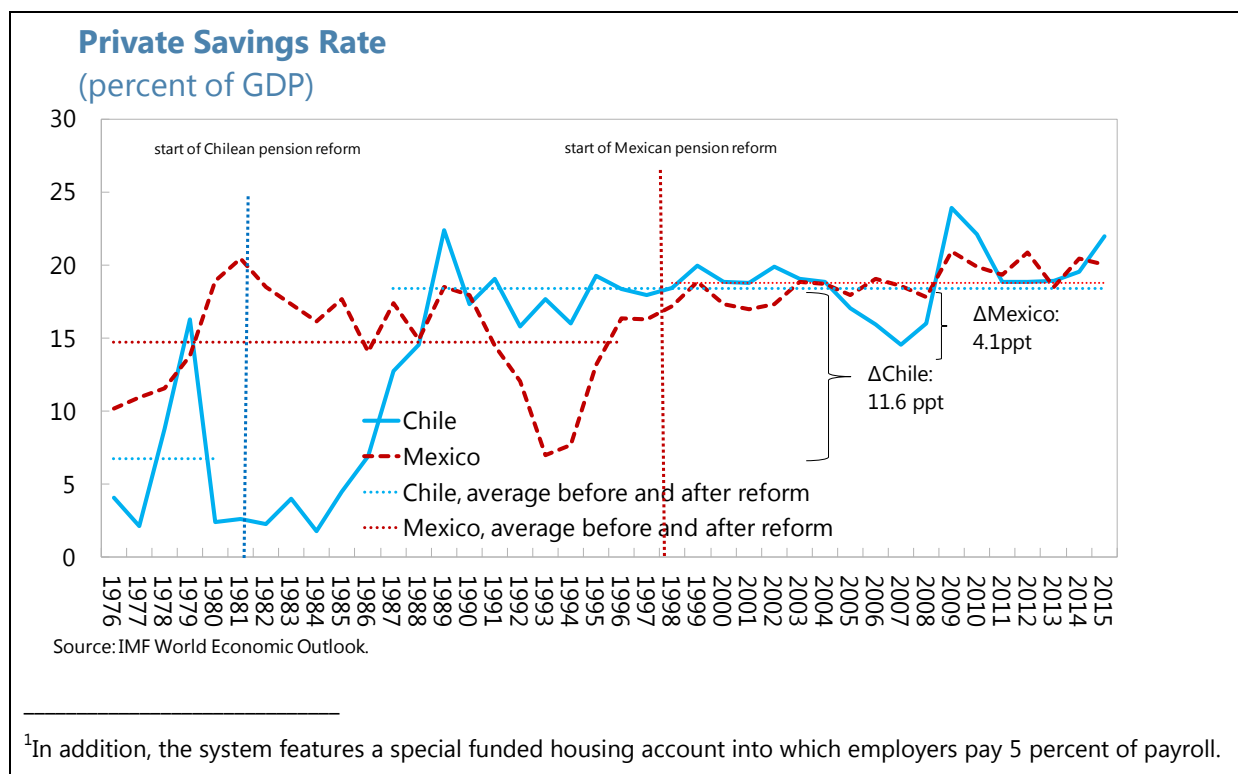
Chile

By 1979 the Chilean pension system featured 32 pension funds, all operating under a pay-as-you-go system. The number of active participants per pensioner had steadily decreased to about 2.5, and evasion of social security contributions was widespread. As a result, the system faced a financing crisis, and contributions and investment returns no longer covered even current pension payments.

The 1981 reform replaced the pay-as-you-go system with a fully-funded pension system based on individual accounts. These accounts were privately managed, with employees given a choice of management company. Employees were given a choice to join. However, an incentive for joining was provided, as contribution rates were set at a low enough level to significantly increase take-home pay for participants. The transition was financed by the issuance of "recognition" government bonds, which were placed in employees' individual accounts. Amounts coincided with the rights employees had built up under the old system.

Chilean workers contribute 13 percent of pensionable salary to their pension fund, disability and term life insurance. Of this total, 10 percentage points concerns pension savings, while the remaining 3 percentage points pays for disability and term life insurance and administrative fees and commissions (Soto, 2007).

The Chilean private saving rate increased significantly over the years since the pension reform. While the private saving rate amounted to a paltry 6.7 percent of GDP in the five years leading up to the reform, it steadily increased to an average of 18.3 percent of GDP between 1987 and 2015. Of course, starting from the mid 1970s, the entire Chilean economy was transformed through a program of deep market-oriented structural reforms. Hence the increase in the private saving rate cannot easily be ascribed to the pension reform. In fact, the actual contribution of the pension reform to the increase in the saving rate remains an issue of lively debate even 30 years after the system's inception. The most thorough analysis of the reforms in Corbo and Schmidt-Hebbel (2006) focuses on the effects on total national saving. To do so it separately analyzes all different channels through which the reform influences aspects of the saving rate: the transition deficit, Ricardian equivalence, new mandatory household saving, and the response of households to this new mandatory saving. It concludes that, based on plausible assumptions, the overall increase in national saving that can be ascribed to the pension reform are between 0.7 and 4.6 percentage points of GDP.

Private Savings Rate
(percent of GDP)

Source: IMF World Economic Outlook.

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[1]In addition, the system features a special funded housing account into which employers pay 5 percent of payroll.

Severance pay

40.   The Turkish severance pay system is generous but inflexible (see, e.g., Gursel and Imamoglu, 2012). In the system, employees in the formal sector become eligible for severance pay after a year with the same employer. They build up the right to a month of severance pay per year worked, based on the last-earned gross wage.[7] Severance pay is payable upon firing or death of the employee, or when the employee retires.[8] Crucially, an employee who quits voluntarily is not eligible for severance pay, and built up rights to severance pay are not transferable. In other words, quitting for another job implies giving up any existing rights to severance pay, and restarting the buildup of rights from scratch. The state (social security institute) is not involved in the severance pay scheme.

41.   And benefits are often not paid. Full compliance with the severance pay according to the labor law is high in the public sector, but limited in the private sector. Many private sector employers avoid paying severance pay. Informal workers are not eligible. In addition, many workers in the formal sector do not receive severance pay, either because they are kept on repeated temporary contracts or a made to formally resign while in fact they were fired. Of course workers can also not be paid because they do not meet the eligibility criteria. Furthermore, for many employees the severance pay is less than a month per year of employment, as the wage base is underreported.

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[7] Severance pay is capped at a rate linked to the gratuity of a civil servant in the highest pay scale.

[8] There are several other eligible events such as compulsory military service, or, for women only, marriage.

Overall this implies that employers' cost of the severance scheme is much below the 8.3 percent headline rate.

42.   Severance pay is an unfunded obligation, and therefore does not contribute to savings. There is no obligation to fund the rights the employees build up, and most employers therefore choose not to fund these obligations. Such unfunded severance obligations do not contribute to domestic savings. While the actual obligation is often less than a month per year (due to underreporting of wage), it is still very substantial, increasing the incentives for employers to come up with ways to avoid paying.

43.   Funding the severance pay scheme would contribute to savings and could at the same time fix some of the shortcomings highlighted above. While funding the scheme would directly result in savings, crucial design questions include whether the savings would accrue to funds on corporate balance sheets or to individual employees' severance accounts, and what the contribution rate should be.[9] Pre-funded individual severance accounts would ensure that eligible employees receive the benefits. Individual accounts would also remove penalties on flexibility in the labor market, as benefits would no longer be tied to staying at a specific company, and increasing coverage to include employees on temporary contracts and self-employed would be straightforward.[10] At the same time, it would reduce employers' incentives to force resignations or use temporary contracts. In order not to increase the labor wedge, contribution rates should be roughly in line with the actual cost of the current scheme for fully-compliant businesses.

44.   The authorities are considering reforms in this direction, but there is no timeline or clear action plan. First of all, the authorities plan to extend severance pay to all employees. They plan to do so by establishing pre-funded individual severance accounts (Ministry of Labor and Social Security, 2014), under the responsibility of the Ministry of Labor. The strategy to establish the scheme and the timeframe within which this should be achieved remain under negotiation between the authorities and the social partners.

45.   The introduction of individual severance accounts could boost the private saving rate by as much as 0.8 percent of GDP. The actual savings that would result depend mainly on the contribution rate and the coverage, as well as the extent to which severance pay savings would substitute other savings. Assuming a contribution rate of 4 percent—or about half of the current unfunded obligation—unchanged coverage, and a substitution effect of 50 percent, would imply additional annual savings of more than 0.8 percent of GDP. In this scenario, the contributed amounts roughly correspond to the amount reported to TURKSTAT as paid out as severance and termination pay. Hence during the transition phase, when current workers' right would also need to be paid out in addition to the funding of the new system, total severance expenses would roughly

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[9] In addition, the scope of eligible events could be revisited.

[10] Including employees on temporary contracts could be done by abolishing the one year minimum employment requirement.

double. If the premium were to increase gradually over time to 8 percent, and under the same assumptions, private saving could be boosted by as much as 1.7 percent of GDP. All of this is under the assumption that the labor market behavior of employees will remain unchanged.[11] Importantly, and in contrast to the current unfunded obligation, if the total wage bill in the economy increases, the amount of savings under this scheme also increases.

46.   The transition phase of such a reform needs to be carefully thought through. For employers that were used to avoid paying, or in case of increased coverage to include employees that were not previously covered, the new system will increases costs through a higher labor wedge. In addition, vested interests from employees in the public sector—who by and large receive the current generous benefits—may oppose reform. A gradual transition, e.g., by first introducing the new system only for new employees and/or gradually moving existing employees over to the new system, could help overcome these problems. However, given that one needs to grandfather existing rights in some form and at the same time strives to build up a funded system, a period of overall higher outlays is unavoidable. Another important issue is the integration of individual severance accounts with the general system of unemployment insurance. In the short run, unemployment insurance could be adjusted to the severance pay reform through parametric changes. In the medium term, an approach integrating both systems (as done, e.g., in Chile, Austria and Mauritius, see Box 2) would likely be most beneficial. Such integrated systems combine, first, severance payment from an individual account with, second, a solidarity component in the form of a stripped down unemployment insurance for workers who have exhausted their severance account balance.

47.   Such reforms would also have positive impact beyond increasing savings. Most prominently, making the benefits portable would directly increase labor market flexibility by no longer penalizing switching jobs. A more flexible labor market improves productivity, and may in turn encourage job creation. Individual accounts would also increase the likelihood of the individual receiving a payout and would hence provide additional security to employees. In addition, like with second pillar pension savings, a steadily growing pool of severance savings could help boost capital market development, and thus enhance capital allocation in the economy, boosting long-term growth.

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[11] If the functioning of the labor market would improve, higher employment and thus a higher saving rate, would be the likely outcome.

Box 2. Severance Pay Reform In Selected Countries

The most successful experiences with severance pay reform have been in countries that fully integrated the unemployment and severance pay systems. Austria and Chile come to mind as good examples.

Austria

In 2003, Austria replaced its existing severance pay system with a system based on individual savings accounts. Until then, employers were obliged to pay employees that had been employed for more than three year severance pay upon dismissal, starting with 2 months wages after three years and increasing to a year's wages after 25 year of employment. Employers had to make provisions in their accounts for part of this obligation, but did not need to fund the obligation.

The scheme was criticized for inhibiting labor mobility and creating an insider-outsider problem, with only about a third of employees eligible for severance pay. The reform dealt with these problems in two ways. First, the individual accounts are by their nature portable. In addition, contributions in the new system started from the first day of employment, taking away the three year eligibility "cliff". The introduction of the system was done in one go at a rate of 1.53 percent of gross wages, but existing severance pay entitlements under the old system were grandfathered.[1] Over the first ten years the reform yielded cumulative savings of 2 percent of GDP. In other words, in the build up phase, where the number of covered employees was slowly increasing, annual saving increased by some 0.2 percent of GDP on average.

Chile

Chile combined its severance pay and unemployment subsidy systems into one in late 2002. The system was reformed in 2009. The prior separate systems suffered from low coverage, with severance pay only applicable to open ended contracts and unemployment subsidy consisting of a low amount targeted at low income households (just 2 percent of the unemployed population benefitted from the unemployment subsidy in 2001). It came under pressure when unemployment spiked after the Asian crisis and again during the global financial crisis.

The new system is based on individual accounts, but also features a solidarity component, and covers all private employees in the formal sector, i.e., including employees on fixed term contracts. The individual accounts are funded by contributions from both employees and employers. The solidarity fund, which contributes to payouts for those fired because of economic hardship to the firm, is funded by contributions from employers and an annual lump sum from the state. In addition, beneficiaries have access to health benefits, training and job search assistance while drawing benefits under this scheme.

The new system also has focused on keeping down administration costs and management fees. Over time such costs and fees are a significant factor in funds' total returns. To keep them down, the Chilean scheme is operated by a single private party, which is selected through a competitive bid for a period of 10 years. Such "for the market" rather than" on the market" competition combines both competition to keep costs and fees in check and a single operator able to realize efficiencies of scale in operations.

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[1] Austria introduced the new system for all new labor contracts concluded after January 1, 2003. For older contract, transitioning to the new system was voluntary. Therefore, while covering the vast majority of employees, the new system still does not yet encompass all employees.

Subsidized savings

48.   Subsidized saving outside of the pension system is currently a limited part of the policy mix in Turkey. The new government recently introduced a system of dowry accounts. Young unmarried people that deposit contributions into the account for at least three years will be eligible for a 20 percent state subsidy not exceeding TL5,000. In many other countries though such subsidized saving scheme have been, or still are, more omnipresent. In a seminal study, the OECD (2007) compares tax-preferred savings accounts across its membership and evaluates the effectiveness of the schemes in raising private and national savings. A main distinction it employs is between savings accounts purely intended for the purpose of funding future education needs and general savings accounts that can be used for a broader set of outlays or without any restrictions on usage.

49.   The OECD concludes that tax-preferred accounts other than educational plans create new savings only when moderate-income households participate in them. While participation among high-income households is generally high, and they deposit more funds on average than moderate or low-income households, these household are in general not liquidity constrained, and their tax-preferred savings almost entirely substitute for other savings. In addition, as percentage of income their total contributions are smaller than those of households in lower income brackets. Low-income households often face binding liquidity constraints, and hence their ability to divert funds to savings accounts in response to tax incentives is limited. Moderate-income households also face a liquidity constraint, but it is less binding than for low-income families. Hence this the income segment where tax-preferred savings accounts are found to boost the saving rate most. In addition, as in most countries moderate-income households face a lower marginal tax rate than high-income households, the loss of tax revenue is more modest, and hence the boost to national savings is larger. However, even in this study, estimates of the impact of tax-preferred savings on private savings are scant and in general do not suggest large significant effects on the macro level (Box 3).

50.   For tax-preferred educational plans the conclusions differ slightly. These plans attract wealthier households in even greater numbers; as such households have more resources and may be more sensitive to educational matters. An interesting phenomenon is that educational accounts rarely attract the maximum tax-exempt contribution. This seems to signal that households may not want to lock substantial wealth into accounts whose spending goals are narrowly targeted. As such, these kinds of plans—while they may be useful for other purposes such as boosting the take up of (higher) education—are not thought to boost private saving much.

51.   Another question the OECD study touches upon is the efficiency of tax-preferred savings schemes, i.e., whether the schemes increase national savings at the lowest possible costs. In general, incentives to save through tax credits are found to be quite expensive, precisely because many richer households will participate in lieu of their other savings. Encouragement to save through tax exemptions of the part of earning that is saved is found to be less expensive. However, if such schemes are coupled with a savings bonus from the government, plans can become expensive when the government matching rate is generous.

52.   Overall, subsidized savings scheme do not seem to provide an efficient way for Turkey to boost the private saving rate. The effects of tax-preferred savings schemes on the private saving rate would likely be limited, and such scheme would possibly be regressive. More broadly applied subsidies for savings (i.e., savings bonuses) could quickly become expensive to the budget.

Box 3. Tax-Preferred Savings Accounts In Selected Countries

Several OECD countries have set up a myriad of tax-preferred savings schemes, both for educational outlays and for more general purposes. Some examples include:

United Kingdom

 The United Kingdom tax code features tax incentives for individual savings accounts (from 1999), personal equity plans, tax-exempt special savings accounts (until 1999), and child trust fund accounts. In addition, its savings gateway scheme features tax incentives for savings targeted specifically at low and moderate-income households. The child trust fund and savings gateway scheme feature savings bonuses from the government, while the other plans are limited to tax exemptions.

The pace of increase under most schemes was high in the first few years, but slowed rapidly thereafter. This may indicate that when new plans became available, people shifted assets from taxable savings to tax-preferred accounts. However, some studies suggest that up to 15 percent of ISA holders would not have saved had ISAs not existed. Another indication that these accounts may have boosted the private saving rate lies in the fact that the take up among moderate-income households was substantial.

Norway

Between 1982 and 2000, Norway's tax code features a tax-favored savings scheme targeted at equity investments. It allowed for a 15 percent tax credit for share purchases, limited to NOK 10,000 for tax payers in tax class 2 (mainly couples and single parents) and NOK 5,000 for most other households. In 1999, of the tax payers in tax class 2, about 60 percent received the maximum deduction, while of all other tax payers, about 80 percent received the maximum deduction. This less-than-full participation suggests that for a significant part of the participants, the marginal return to savings has changed which could have led to an overall increase in private savings. In addition, this effect is stronger for class 2 taxpayers, which may on average be in lower income brackets than other tax payers, thus further suggesting a positive effect on private savings.

D. Summary and Conclusion

53.   Boosting the private savings rate is important to reduce the external imbalance of the Turkish economy. The large and persistent current account deficit has been financed by ample capital inflows. This situation presents a vulnerability of the Turkish economy and may ultimately prove unsustainable. The vulnerability can be reduced by decreasing investment— which would lower the potential growth rate of the economy—or increasing domestic saving— which would

lower consumption but increase the economy's growth potential. As government finances are already in decent shape, most of the savings boost should come from the private sector.

54.   The authorities have recognized this and put raising the private saving rate forward as an important policy goal. To that effect they have introduced a subsidized third pillar pension scheme, and, more recently, a savings subsidy for dowry accounts. They have also piloted an auto-enrollment funded pension scheme, and are considering scaling up this pilot. Lastly, proposals to reform the severance pay scheme by making it a funded and transferable benefit have been put forward. The authorities have also used macroprudential tools to limit credit growth, motivated by the (systemic) prudential risks in the banking system very high credit growth may cause.

55.   Going forward, full and swift implementation of the pension and severance pay reform plans is key. Given the urgency of reducing vulnerabilities and the time lag with which new policies will affect the savings rate, the time to start is now. In addition, Turkey's relatively young population implies the country is enjoying a demographic dividend, which provides a window of time to increase savings in anticipation of almost inevitable population ageing in the future. Macroprudential policies limiting credit growth should also remain part of the policy mix.

56.   Careful attention needs to be paid to the details of the systems' designs, including transition issues. For the pension system in particular, the design of the fee structure to a large extent determines the ultimate welfare benefits of the system. Attention should not only be paid to the accumulation and investment phase of the system, but also to the payout phase and the balance between the associated risks for the participating individuals and the system. In addition, it is crucial to fund the transition to the new pension and severance pay systems fairly and efficiently, possibly by diverting some of the subsidies currently being allocated to third pillar pensions and other subsidized savings schemes. Studies performed by the authorities together with the World Bank provide much detail and options on these crucially important issues.

57.   The reforms will likely have other benefits besides increasing domestic savings and reducing external vulnerabilities. These include more labor market flexibility through severance pay portability; lowering of old age poverty rates through higher pension savings; and boosting domestic capital market development. They may hence provide an important contribution towards the authorities stated goal of boosting the long term growth potential of the economy.

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TURKEY'S INCREASE IN THE MINIMUM WAGE FOR 2016[1]

The minimum wage increased by 30 percent in January 2016, affecting around 8 million workers directly. Despite the government subsidies, the overall wage bill is estimated to increase by 0.7 percent of GDP. Yet, the impact on employment could be mitigated by the large informal labor market; the increase will be also partially eroded by inflation over the coming years. The fiscal cost of the subsidy will be around 0.56 percent of GDP, but the net fiscal cost is estimated to be smaller once the increase in revenues from indirect taxes and pension contributions are taken into account.

1.   **The minimum wage fixing board increased the minimum wage by about 30 percent starting on January 1, 2016.[2]** The board fixed the gross minimum wage at TL1647 per month, an increase of 29.3 percent from the minimum wage set in July 2015 (and 33.1 percent higher than the average minimum wage for 2015). This implies the net minimum wage, for single worker with no dependents, has increased by 30 percent to TL1300 in January 2016 from TL1000 in mid-2015.

2.   **To ameliorate the impact on the labor market the government will provide a temporary subsidy for labor.** For 2016, the government will support formal employment—for those earning up to TL2550 per month—by providing a subsidy amounting TL100 per month. Under the government's current plan, this support will be discontinued in 2017.

3.   **About 8 million workers will be directly affected by the increase, but many more will be affected indirectly.** Data from the social security institution suggest that about 8 million formal workers earned wages below the new minimum wage threshold. The increase will also put pressure to raise the wage of workers above the threshold, albeit significant more bunching of wages along the minimum wage is expected. In relative terms, the minimum wage increase will affect more women than men in the formal sector, as 65 percent of the female workers have a salary below the new minimum wage, while the share for male workers is at 61 percent. While the proportion of minimum wage earners is similar, for women the distribution of wages is bunched closer to the minimum wage. However, almost half of women are employed in the informal sector, compared to only about 30 percent of men. This implies female workers will be less affected if the minimum wage increase affects the informal labor market less.

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[1] Prepared by Jiaqian Chen and Enrique Flores.

[2] The fixing board consists of representatives from employees, employers and the government, and the size of the increase is aligned with the AK Party campaign promises for Turkey's general election of November 2015.

A. Implication on Wages and Labor Costs

4.   Social security contribution, unemployment insurance, personal income taxes, and stamp taxes affect net wages and labor costs. For minimum wage earners, the minimum wage increase will result in a higher net salary, but also in higher contributions to the social security and higher personal income taxes. The government subsidy largely returns those extra earnings to limit the impact on labor costs. To calculate this impact it is necessary to understand the impact of taxes and contributions:

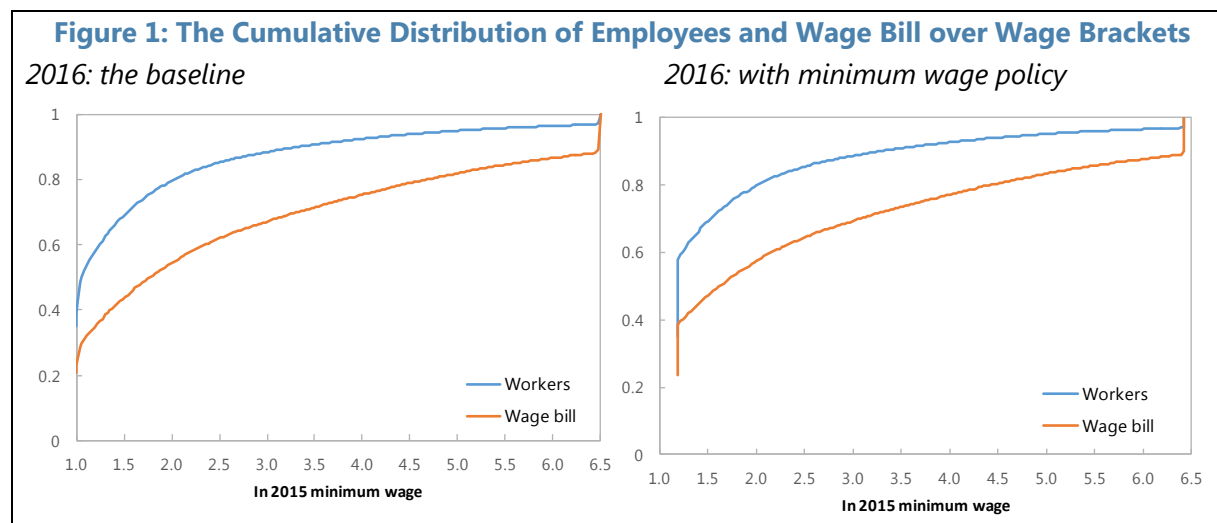**Change in the Minimum Wage**
(TL ; July2015 to January 2016)
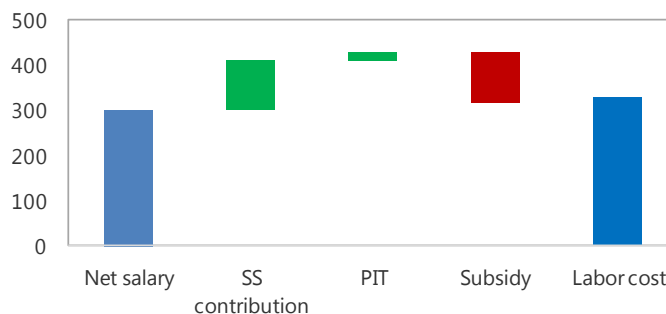
- **From gross to net wages.** The gross salary is subject to employee social security contribution (14 percent) and the unemployment insurance fund contribution (1 percent), which are excluded from the tax base. The tax base is subject to personal income tax (the lowest personal income tax bracket is subject to a 15 percent tax) but is reduced by the minimum living allowance—which is linked to the minimum wage. There is also a stamp tax on gross wages at a 0.759 percent rate.

- **From gross wages to labor cost.** Labor costs include the gross wages, the social security premium paid by the employer (15.5 percent), and the unemployment insurance fund contribution (2 percent).

5.   In order to analyze the impact on the labor market, we use data from the Turkey Social Security Institution (SGK). The data contains information on the distribution of the number of insured person by insurable earning levels. However, this dataset has three important limitations: (i) the last available data is for 2014; (ii) the data has a truncated distribution at the right tail due to the cap on social security contributions (at 6.5 times the minimum wage), and (iii) it covers only formal workers. Therefore, to construct the distribution for 2015, we assumed that wages increased by the inflation rate, and that the relative wage distribution remained unchanged.

6.   We estimate that the share of workers with minimum wage will increase to about 58 percent of the total formal workers. For this, we constructed a cumulative distribution function (CDF) for the wage bill in 2016. First, we inflated the 2015 wage bill by 11 percent; this gave us a baseline for the wage distribution for 2016. The 11 percent was chosen, because this is the agreed wage increase for public sector employees for 2016. Then workers with gross wages at or below the minimum wage were set at TL1647. Figure 1 illustrates the cumulative distribution of workers and wage bill over different real insurable earning levels that are normalized with the 2015 minimum

wage. The left panel shows the CDF assuming no policy change, and the right panel shows the CDF with the minimum wage policy—and our implicit assumption that the increase in minimum wage does not trickle to wages above the minimum wage, which implies that the number of workers on the brackets above the new minimum wage remain unchanged.

Figure 1: The Cumulative Distribution of Employees and Wage Bill over Wage Brackets

7.	**The minimum wage increase is estimated to raise net wages and labor costs by 0.9 and 1.3 percent of GDP, respectively.** Table 1 shows our estimates for the increase in net wages and labor costs. Approximately 8 million workers are affected by the minimum wage increase representing about 60 percent of the formal worker. The minimum wage policy would lift their gross wages to TL1647, implying a net wage increase by about 0.9 percent of GDP. This also translates to an additional burden to firms as the labor cost increasing by 1.3 percent of GDP.

Table 1. Turkey: Impact of the Minimum Wage Increase and Government Subsidy
(change from the baseline in percent of GDP unless otherwise stated)

| (TL per month) | Workers (in million) | Gross wages | | Taxable income | Income and payroll taxes | | | | Net wage | Labor cost | Government subsidy | Net Labor costs |
		Average (in percent)	Total		Income tax	Social security contribution	UIF	Stamp				
minimum wage =	5.0	20.6	0.77	0.66	0.07	0.23	0.02	0.01	0.58	0.91	0.28	0.64
minimum wage < x < 1647	2.9	12.9	0.30	0.26	0.01	0.09	0.01	0.00	0.24	0.35	0.16	0.19
1647< x <2550	2.4	0.0	0.00	0.00	-0.03	0.00	0.00	0.00	0.03	0.00	0.13	-0.13
>2550	2.8	0.0	0.00	0.00	-0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00
Total	**13.2**	**6.56**	**1.08**	**0.91**	**0.03**	**0.32**	**0.03**	**0.01**	**0.88**	**1.26**	**0.57**	**0.70**

Note: Changes are estimated with respect to a baseline that assumes an 11 percent increase in nominal wages.

8.   The increase in the labor costs will be ameliorated by the government subsidy. The
authorities calculate that 40 percent
of the increase in labor costs is
absorbed by the government through
the subsidy. This calculation is based
on a baseline that assumes an
increase in the minimum wage in line
with the increases granted to
government employees. We use
slightly different assumptions and
estimated that the increase in labor
costs would be about 1¼ percent of
GDP, with the government covering slightly more than 40 percent of that increase.

Impact of Minimum Wage
(Percent of GDP)

Minimum wage
Directly impacted
Not directly impacted but subject to subsidy
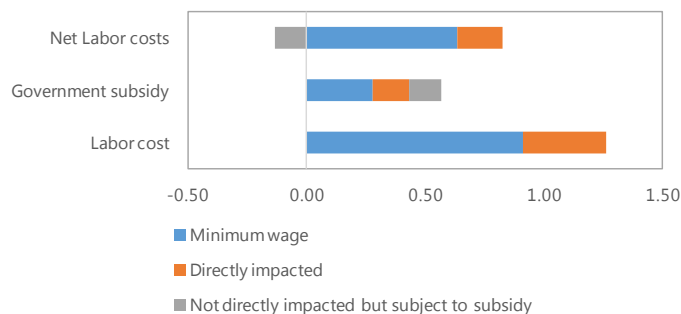
9.   The subsidy will also lower the costs of employing mid-skill workers. The labor costs for
those not directly affected will actually decline due to the subsidy. While there might be some
trickling up in wages, under reasonable assumptions the subsidy will reach workers that will likely
face little impact from the minimum wage increase.

## B.   Implication on the Labor Market

**10.   The literature seems to have concluded that the impact of minimum wages on
employment is small in advance economies.** Freeman (1996) stated that "—debate over the
employment effects of the minimum wage is a debate of values around zero." Yet, the debate
remains lively on whether the impact is negative or insignificant, particularly for the small group of
people for which the minimum wage is binding—typically the youth and low skill workers. Card and
Krueger (2001) found no evidence of the rise in minimum wage reduced employment of low skill
workers in the fast-food industry in New Jersey. Yet, Neumark and others (2014) have challenged
this view suggesting minimum wages would cause job losses for the lower-skilled workers. Several
explanations have emerged to reconcile these empirical observations with theory. One possibility is
that the effects of minimum wage could be felt through other channels including non-wage benefits
or training, as firms tend to be reluctant to layoff existing labor.

**11.   Yet, much less is known about the impact of minimum wage in emerging economies,
and the existing results are inconclusive.** Few EM-specific factors complicate the assessment, and
point in different directions. On one hand, the high share of minimum wage earners suggests larger
impacts from an increase in minimum wage. Moreover, the increase in the minimum wage is
sometimes a benchmark to adjust the whole wage distribution, thus the whole wage curve could
move with the increase in the minimum wage (see Maloney and Mendez, 2004 and
Gürcihan-Yüncüler and Yüncüler, 2016). On the other hand, low compliance levels (Bhorat and
Stanwix, 2013) and large informal labor markets dampen the impact from the minimum wage.

12.   Studies on the impact of the minimum wage on the Turkish labor market have shown mixed results. Using the Household Labor Force Survey for 2002-2005, Papps (2012) found that a 1 percent increase in labor costs resulting from an increase in the minimum wage leads to a 0.13 percent fall in the probability of remaining employed in the following quarter, and that the impact is stronger for young and rural workers. These results are qualitatively similar to those obtain from simulations using the IMF GIMF model, a calibrated DSGE model, which suggests that a 1 percent increase in the real wage markup—over labor productivity—would lead to an increase in unemployment of about 0.3 percent two years after the shock. On the contrary, using data from 1996 to 2006, Korkmaz and Coban (2006) found that the long run relationship between minimum wage and unemployment is statistically insignificant. Moreover, Pelek (2011) found no effects on low-skilled youth employment.

13.   In Turkey, several factors mitigate the possible impact on employment. The high share of employees whom are hired at or around the minimum wage (around 30 percent in 2014) suggests the impact should be large. However, the informal sector—which accounts for about 35 percent of total employment—is large and able to absorb a significant share of workers, such that the increase in minimum wage may have little effect on the overall employment—but result in a significant increase in informality.

14.   Moreover, a high inflation environment may help to mitigate the impact of the minimum wage hike over time, by setting modest increases in following years. The sharp increase—about 38 percent—in the minimum wage in 2004 was followed by modest increases breaking the upward trend in the ratio of minimum wages to average wages. If the previous trend had continued, the minimum wage might have been at the same level by 2007. The increase in the gross minimum wage in the four years following the 2004 increase averaged 9½ percent, but with inflation averaging 8.8 percent the impact in real terms was minimal.

Ratio Between Minimum and Average Wage
(Ratio)
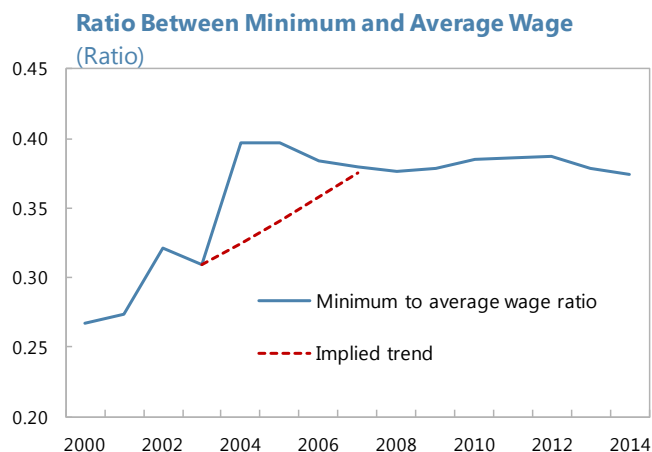
Sources: OECD ; and IMF staff calculations.

Thus, a high inflation environment facilitated containing real wage increases.

15. **In light of all these factors, we see the impact on labor market from the recent raise in minimum wage may be small.** In part, because the higher minimum wage would boost the spending power of the low-income workers leading to higher private consumption. However, there could be a significant surge in informality, at least temporarily, which could have adverse effects on productivity and increase fiscal costs. This would allow firm to reduce the impact from the policy change, while retain its employees. In addition, the structural of the subsidy "distorts" the labor skill premium by making the middle skilled workers (ones who are earning between TL1670–2550) cheaper compared to the low-wage and high wage earners.

Turkey: Impact of the Minimum Wage Increase and Consumption

(TL per month)	Workers (in million)	Net wage (percent of GDP)	Consumption 1/ (percent of GDP)
minimum wage =	5.0	0.58	0.53
minimum wage < x < 1647	2.9	0.24	0.21
1647< x <2550	2.4	0.03	0.03
>2550	2.8	0.02	0.02
Total	**13.2**	**0.88**	**0.79**

1/ Assuming a coefficient of 0.9 on the propensity to consume.

16. **The raise in minimum wage would raise aggregate demand over the short run, while having negative impacts on the supply side.** Given the high marginal propensity to consume for the low-wage earners, they are very likely to spend a high share of the increased wages at 0.9 percent of GDP. Yet, the cost of the higher minimum wage, at 1.3 percent of GDP amounts to about 1/3 of firms' profit.[3] Assuming no major lay off the existing workers, firms essentially have three options to absorb the raising costs.

- First, they could simply reduce their profit margin, which would likely to translate to lower capital investments.

- Second, firms can pass on the higher costs to the price of consumption goods which would in turn add to the already high inflation.

- Last but not least, firms would force some of the workers into informal sector, making the new minimum wage not binding. Although this option has the least adverse impact on inflation and investment, it has negative consequences for the budget, as social security contribution and personal income tax receipts would decline. It could also impact productivity, as firms in the informal sector are characterized by lower productivity levels.

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[3] To derive the total non-financial corporate profits as share of GDP, we assume the ratio between net profit and total asset to be 2.8 percent, which is consistent with what the CBRT's firm level data suggests.

C. Fiscal Implications

17. **The increase in indirect taxes, social security contributions, and the limited increase in personal income tax thresholds will partly offset the direct fiscal costs due to the employment subsidy**. The minimum wage increase will have a negative effect on the personal income tax due to the minimum living allowance, albeit it will be largely compensated by a modest increase in the PIT thresholds. It will boost contributions to the social security and the unemployment insurance fund, as well as indirect taxes—partially compensating the fiscal cost of the subsidy. Below are some rough estimates of the fiscal costs.

- **The subsidy will cost about 0.56 percent of GDP.** Based on social security data, there are about 10.3 million workers with earning below TL2550. The government subsidy of TL100 per month per work implies that the total cost is about TL12 billion. This is likely a lower bound, as there will be incentives to move higher wage earners into the range by creating new firms and underreporting their wages.

- **A positive impact on indirect taxes is expected**. The Turkish tax system relies significantly on consumption taxes. The positive effect on aggregate consumption will result in higher VAT and SCT revenues. Assuming the impact is similar to the average VAT and SCT on disposable income—and taking into account that the shares are higher for the households in the lower income quintile—we expect an increase in indirect taxes of about 0.16 percent of GDP.

Impact of the Minimum Wage on Indirect Taxes
(percent of GDP)

	Consumption	Consumption taxes	
		VAT	Excises
minimum wage =	0.53	0.05	0.05
minimum wage < x < 1647	0.21	0.02	0.02
1647< x <2550	0.03	0.00	0.00
>2550	0.02	0.00	0.00
Total	0.79	0.08	0.08

- **The minimum wage increase raises also the minimum living allowance.** This allowance is equivalent to 50 percent of the minimum wage for a single worker taxed at the rate of the lowest bracket. The allowance is increase by 10 percent of minimum wage for a non-employed spouse, 7.5 percent for each of the first two dependent children, 10 percent for the third dependent child, and 5 percent for each additional dependent child. The assessment is then multiplied by the first tax bracket, at 15 percent, to get the size of the allowance. Therefore, the increase in the minimum wage entailed a decline in the effective personal income tax rate

- **Clawing back the increase in the minimum living allowance**. The higher wages will increase taxable income by about 0.9 percent of GDP, which would result in an increase in tax revenues. The higher tax revenues from low wage earners will be partly offset by lower

tax revenues on high wage earners that also benefit from the minimum living allowance. To claw back part of the unintended tax break, the government pursued a modest—well below inflation—increases in the income tax bracket thresholds. The net effect will be a small increase in personal income taxes of about 0.04 percent of GDP.

- **The loss of corporate income taxes is hard to estimate**. Companies can absorb the increase labor costs by reducing profits, raising prices or some could pursue informality. Assuming that 40 percent of the increase is absorbed through profits the decline in corporate income tax revenue would be about 0.055 percent of GDP.

18.   Fiscal costs would be larger to the extent that the minimum wage leads to an increase in informality. The previous estimates assume that employment and formality remain unchanged. To the extent that informality increases, the fiscal cost would increase by about 0.02 percent of GDP for every percent increase in informality. This is likely a lower bound as it assumes that workers will just be relocated to the informal sector earning their previous salary and therefore limiting the impact on indirect taxes. It also assumes that the move to informality results in a proportional loss of CIT with respect to the 2015 level.

Sensitivity of Fiscal Costs to Increase Informality
(percent of GDP, unless otherwise stated)

| Increase in informality (in percent)	CIT	PIT	VAT	Excises	Social security contributions	UIF	Stamp	TOTAL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	0.017	0.003	0.000	0.000	0.002	0.000	0.000	0.023
3	0.050	0.008	0.001	0.001	0.006	0.001	0.000	0.068
10	0.167	0.028	0.005	0.005	0.021	0.002	0.001	0.228

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NON-FINANCIAL CORPORATE SECTOR DEBT IN TURKEY[1]

Non-financial corporate sector (NFC) debt[2] has increased substantially in recent years, on the back of increased foreign currency (FX) leverage. This has translated into a large and widening net open FX position. Partially mitigating these developments, the maturity of FX debt has lengthened, thereby alleviating firms' short term refinancing, and interest rate risks. Indeed, the corporate sector has been resilient through a period of marked exchange rate depreciation as well. However, a sizable portion of NFC FX debt is held by more vulnerable sectors with less favorable natural hedging and debt service capacity. These vulnerabilities have, on balance, become larger, and could become a source of brittleness when economic and financing conditions turn less supportive. Over the short term, concentration of NFC FX leverage in a few non-tradable industries may also pose risks for the domestic banking sector. The growing disconnection between higher NFC borrowing and private investment in recent years may also have implications for the country's medium term growth potential.

A.   Stylized Facts

1.   NFC indebtedness rose significantly in most emerging economies (EMs) after the 2008 global crisis. Exceptionally accommodative global financing conditions since 2008, as well as the concomitant relaxation of domestic financial constraints in emerging market economies (EMs) have offered the NFC sector new venues to increase leverage both in FX and local currencies. As a result, NFC debt in EMs rose on average by 26 percentage points of GDP to US$18 trillion over 2004–14 (IMF GFSR 2015).

Change in Corporate Debt:2007-2014
(in percent of GDP)

Source:IMF

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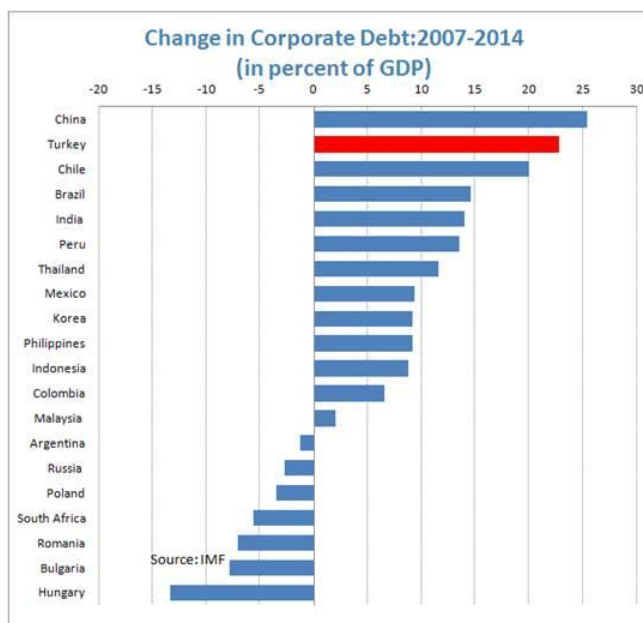
[1] Prepared by Recai Çeçen and Erdem Ataş.

[2] Unless otherwise stated, NFC debt refers to NFC financial debt which includes NFC TL loans and FX loans excluding NFC import debt.

2.   Turkey has seen a significant increase in NFC debt since 2008, among the highest in EMs. NFC debt in Turkey rose by 44 percentage points of GDP to about 69 percent of GDP over the last decade, well above the average change in EM NFC debt.

3.   The increase in NFC debt-to-GDP ratio was driven primarily by a rise in longer-term FX leverage. The NFC FX debt-to-GDP ratio rose from 14 percent in 2005 to 39 percent in 2015, accounting for 56 percent of the rise in total NFC debt. At the same time, the share of long term FX debt rose from 51 percent to 82 percent of total NFC FX debt, mitigating the short term rollover, exchange rate, and interest rate risks. Importantly, the CBRT data on NFC long term FX loans extended by domestic banks are presented on an original maturity basis, which may result in an overstatement of the long term FX debt and understatement of the short term FX debt compared to a presentation based on remaining maturity basis.

4.   Higher FX leverage has translated into a large and widening net open FX position. As FX asset accumulation fell far short of FX leverage build-up, the net open FX position rose substantially from US$21.7 billion in 2005 to US$175.3 billion in September 2015, widening by 23.4 percentage points

NFC Debt
(Percent of GDP) 1/
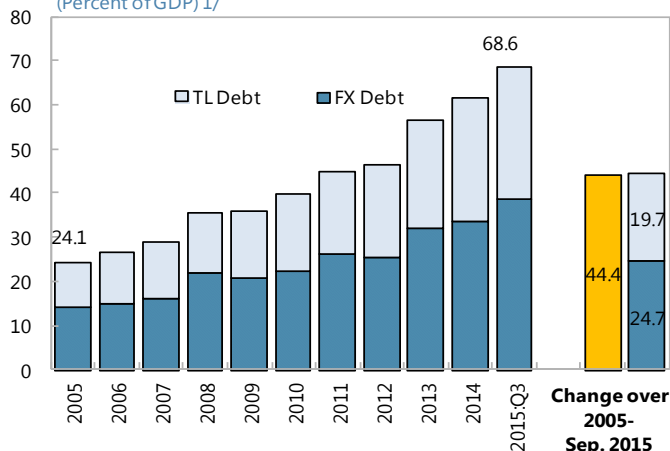
Sources: BRSA; and CBRT
1/ Corporate bond issues are excluded.

Maturity Composition of NFC FX Loans 1/
(Share of Long term FX Loans; in percent of total NFC FX loans)
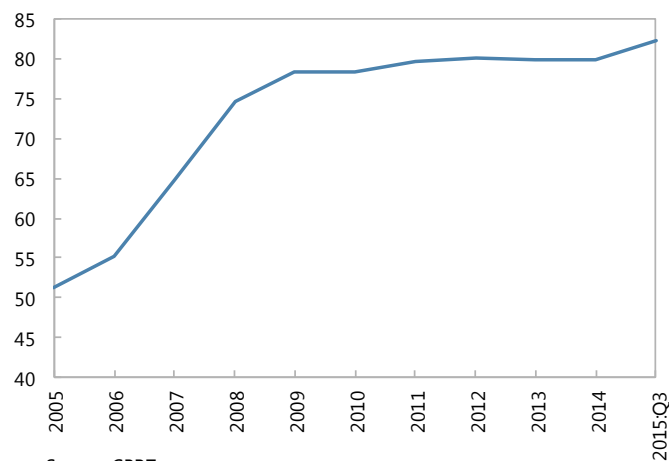
Source: CBRT.
Note: 1/ Exclude import loans.

NFC Net FX Position
(Billions of USD)
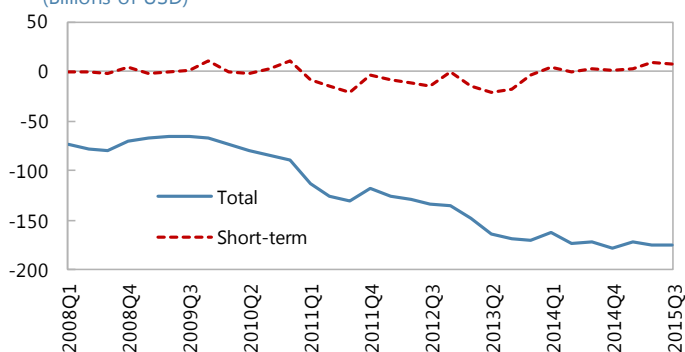
Source: CBRT.

to 27.9 percent of GDP. More than three-fourths (18.3 percentage point of GDP) of the cumulative increase in net open FX position over 2005—September 2015 took place after the 2008 global crisis due to a rise in FX loans, mostly extended by domestic banks. This is, to some extent a reflection of the impact of regulatory changes in 2009 aimed at bolstering NFC FX lending by domestic banks through their on-shore branches rather than off-shore branches. However, it should also be noted that despite the large and widening net FX position, the NFC net short term FX position remains minor and stable.
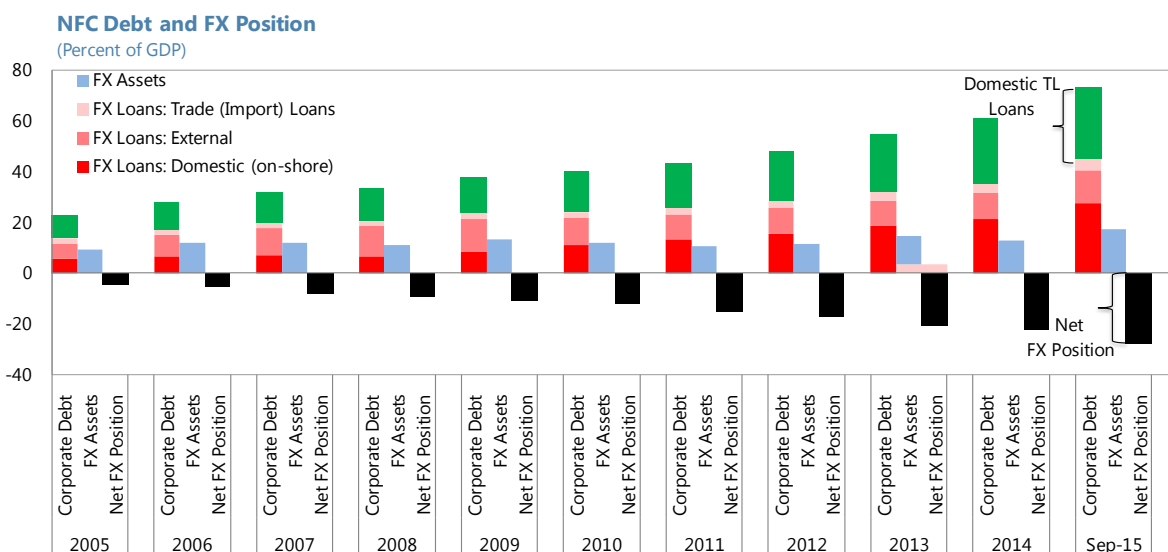
NFC Debt and FX Position
(Percent of GDP)

Sources: BRSA; and CBRT.

5.   While a large portion of the NFC FX debt is held by big companies, a non-trivial portion of total FX debt is owed by SMEs that could face future constraints in accessing financing. SMEs accounted for 56 percent of total exports in 2014, while they owed 36 percent of total NFC loans, and 20 percent of NFC FX loans as of late 2015. While significant SME involvement in exports provides natural hedge buffers against FX indebtedness, a less favorable export outlook could mean lower natural hedge buffers, going forward. In addition, a possible increase in refinancing needs of big companies may further constrain SMEs access to bank lending.

NFC Loans by Company Size
(Percent of respective total)
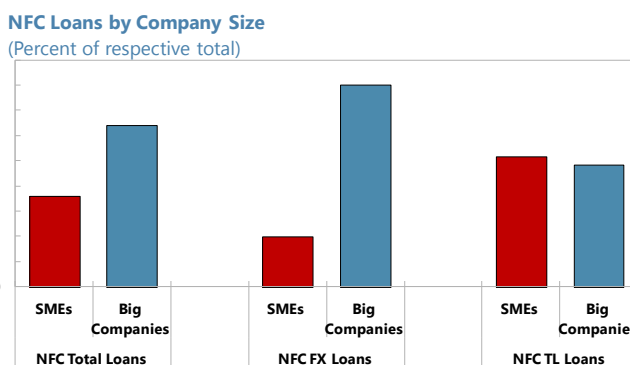
Source: BRSA.

6.   Despite high FX indebtedness, the NFC sector has proved resilient thus far. While the NFC's balance sheet has been stretched by a few currency depreciation episodes, no systemic company failures and credit defaults have been experienced so far. Nevertheless, the NFC's aggregate balance sheet has responded to exchange rate shocks through a combination of stock and flow adjustments, including a deteriorated debt-to-equity mix, as well as lower profitability and a slowdown in fixed investment.

7.   This resilience may be explained by multiple factors, some possibly more durable than others:

- A supportive external financing environment may have helped NFCs to rollover due FX debt obligations smoothly.

- Domestic banks have, in general, had high external debt rollover ratios, allowing for continued domestic financial intermediation of external bank funding into the NFC FX borrowing. In addition, the NFC's own external debt rollover ratios have also remained high.

- The lengthening of maturities of NFC FX loans by banks may have mitigated NFC's short term re-financing risk and limited companies short-term cash outflows for financial expenses in the wake of currency weakness.

- Resilient domestic growth may have helped company earnings, creating room for firms to pass on extra cost of currency weakness to their prices (in some sectors through FX-indexed pricing)

- The relatively small short-term FX position meant that NFC had sufficient liquid FX assets to cover short-term FX debt obligations.

- Banking sector forbearance may have allowed for restructuring and/or or reclassification of potentially problematic NFC FX loans.

- Company owners' unregistered personal financial holdings (especially in FX or gold, that are neither booked in the company accounts nor in the official NFC macro data) may have been used to finance NFC expenses during financial distress episodes.

NFC's off-balance sheet financial hedges that are not recorded in the official data may have limited companies' financial losses from currency weakness.

Selected NFC Financial Ratios

(Percent)

	High yet slowing growth	Crisis Years	Post-crisis Strong Growth Rebound	Slower Growth
	2005-2007	**2008-2009**	**2010-2011**	**2012-2014**
Leverage				
Total Debt / Total Assets (Leverage Ratio) 1/	49.0	56.6	56.7	59.7
Total Debt/ Own Funds (Debt to Equity Ratio)	96.1	130.4	131.1	148.7
Shareholders Equity / Total Assets	51.0	43.4	43.3	40.3
Debt Maturities				
Long Term Liabilities / Total Liabilities	13.0	16.8	19.0	22.6
Liquidity				
Current Assets / Short Term Liabilities (Current Ratio)	142.7	130.2	140.9	139.3
(Liquid Assets + Marketable Securities)/ Short Term Liabilities (Cash Ratio)	24.8	23.1	28.5	26.4
Asset Composition				
Tangible Fixed Assets (Net of Depreciation)/ Total Assets	26.3	26.7	27.4	26.7
Current Assets / Total Assets	51.4	51.8	53.1	51.7
Funding of Tangible Assets				
Tangible Fixed Assets (Net) / Long Term Liabilities	203.0	159.4	144.3	118.8
Profitability				
EBIT / Net Sales	8.3	8.0	7.3	6.7
Interest Expenses / Net Sales	2.2	3.9	2.9	2.9
Net Profit /Net Sales	5.0	3.1	3.4	3.1
Profit Before Interest and Tax / Interest Expenses (ICR)	381.5	213.1	260.0	241.5

Source: CBRT.

1/ Total debt refers to total non-equity liabilities.

B.   Data Analysis[1]

8.   The key findings of the data analysis presented in the next section are summarized as follows:

- The rise in NFC FX leverage has no statistically significant relationship with private investment growth.

- Higher NFC FX leverage may put pressure on firm profitability which may in turn constrain firms' tangible asset investments.

- A large contribution to higher NFC FX indebtedness came from the non-manufacturing and lower-naturally-hedged sectors.

- Sectors with weaker debt service capacity hold a sizable portion of total NFC FX debt.

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[1] The analysis covers publicly available data as of end 2015.

- Brittleness associated with NFC debt service capacity may increase with higher global risk aversion, slower domestic growth, and protracted exchange rate volatility.

9. **Both domestic and external factors are associated with the rise in NFC FX leverage.** A time series analysis is employed to explore the association between the Turkish NFC FX annual loan growth and the respective annual changes in the key domestic and global macroeconomic variables over the period of 2007:Q4–2015:Q3. On the external side, the analysis unsurprisingly suggests (see tables below) a statistically significant positive association between the annual changes in the NFC FX loans and global capital flows to non-bank entities in EMs. Accordingly, an increase of

Global Flows to EM Non-Banks and Turkish NFC FX Loans
(US$ billion)

Sources: BIS; and BIS.
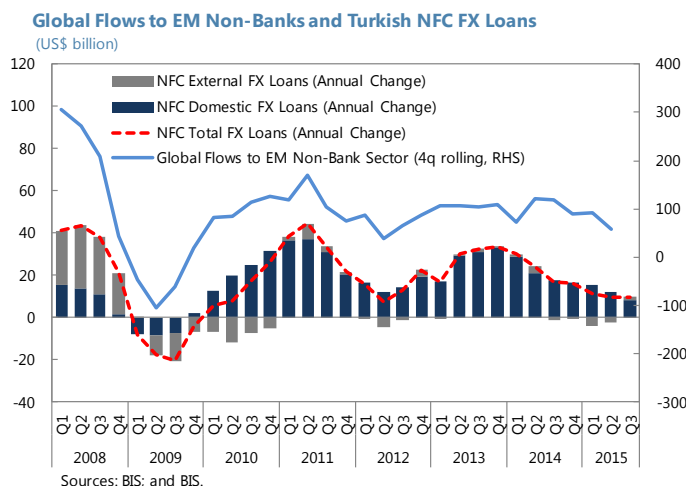
US$1 billion in annual global capital flows to EMs is found to be associated with an increase of US$85 million in annual in NFC FX loans in Turkey. On the domestic side, (i) the real GDP growth; (ii) the interest rate spread between commercial TL and US$ lending rates (adjusted for expected rate of change in the exchange rate); and (iii) the short-term trend of the real effective exchange rate, are all found to have a statistically significant positive association with the annual growth in NFC FX loans. The data suggest that a one percentage increase in annual real GDP growth rate is associated with an increase of US$1.71 billion in annual NFC FX loans while one percentage point increase in annual change in commercial lending rate spread is associated with an increase of US$197 million in annual NFC FX loans. On the other hand, there is no statistically significant relationship between the annual growth rates of private investment growth and NFC FX loans.

NFC FX Loans and Lending Rate Spread
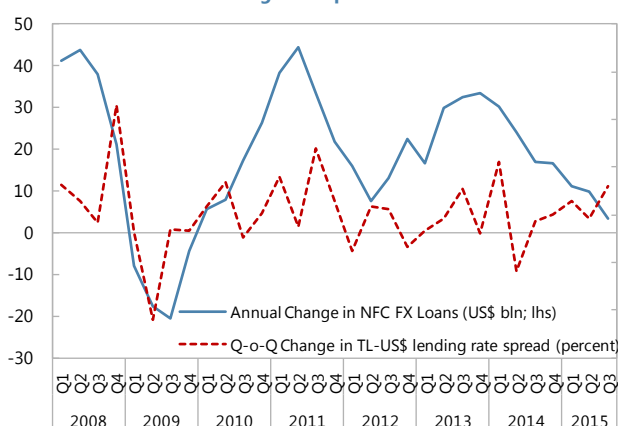
Source: CBRT.

NFC FX Loans and REER (PPI-based)
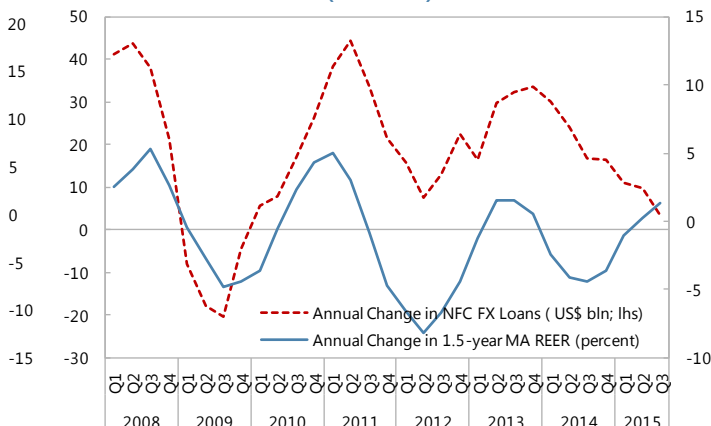
Source: CBRT.

10.   The corporate tax code has an inherent bias toward debt over equity finance. Firms'
interest expenses are deductible from the CIT base, while dividend payouts are not. In addition, firms
are also liable for a withholding tax of 15 percent on their dividend payouts, implying
"double-taxation" on shareholders' equity. Recently, the tax code's debt-bias has been somewhat
mitigated after the government enacted (in July 2015) a new CIT allowance in the form of a new
"notional interest deduction" for cash capital injections to non-financial firms (excluding SOEs).

**11.   Regulatory restrictions on domestic FX borrowing by firms with no FX income were
eased in 2009.** Before the 2009 regulatory amendments, only firms with FX income had been
allowed to borrow FX-denominated loans from on-shore bank branches at maturities no longer than
18-months. These restrictions implicitly created a venue for firms with no FX income to borrow in
FX-denominated terms through domestic banks' off-shore branches that were free of regulatory
restrictions on FX borrowing. In June 2009, authorities removed these restrictions, and instead
allowed firms with no FX income to borrow FX-denominated loans from on-shore bank branches,
provided that size and original maturity of FX-denominated loans shall be set at no shorter than
US$5 million and 1 year, respectively. No such restrictions had applied for those firms with no FX
income, should they have sought to borrow FX-indexed loans from on-shore branches Furthermore,
the new regulation also offered firms with no FX income to be exempted from the new loan size and
maturity limitations so long as they collateralized FX-denominated loans with FX deposits and
securities parked at on-shore branches.

Model A: NFC FX Loans[3]

	(Model 1) NFC FX Loans	(Model 2) NFC FX Loans
Domestic Factors		
REER	3.479***	3.255***
	(6.03)	(5.51)
Real Private Investment		-0.155
		(-1.04)
Real GDP	1.711***	
	(4.98)	
Lending Rate Spread (t-1)	0.236***	0.197***
	(4.32)	(3.79)
Global Factors		
Capital Flows		0.0850***
		(2.15)
Constant	15.25***	23.73***
	(6.92)	(11.29)
Number of Observations	31	30
Adjusted R-Squared	0.65	0.67

t statistics in parentheses
* p<0.1, ** p<0.05, *** p<0.001

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[3] These regressions are illustrative because of limited number of observations and problems of endogeneity. Please see Annex for
model specification and variable definitions with descriptive statistics.

12. **These developments resulted in a substantial shift in residency composition of NFC FX assets and liabilities.** In the aftermath of the regulatory amendment in June 2009, the composition of NFC FX loans and deposits predictably witnessed a structural shift in terms of residency constituency from domestic banks' off-shore branches towards on-shore branches. The share of NFC FX loans extended by domestic banks on-shore branches rose from 33 percent of total NFC cash FX loans in 2009:Q2 to 68 percent in 2015:Q3, while the share of NFC FX deposits parked at the domestic banks on-shore branches rose from 44 percent of total NFC FX deposits to 75 percent over the same period. Considered together with the large and widening open NFC FX position, the direction and size of the post-2009 shifts in the residency composition of NFC FX deposits and loans suggest that NFC FX borrowing by firms with less robust FX income buffers may be sizable.

Structural shift in composition of NFC Deposits (percent of respective total)

Source: CBRT.

Structural shift in composition of NFC FX Loans (percent of respective total)

Source: CBRT.
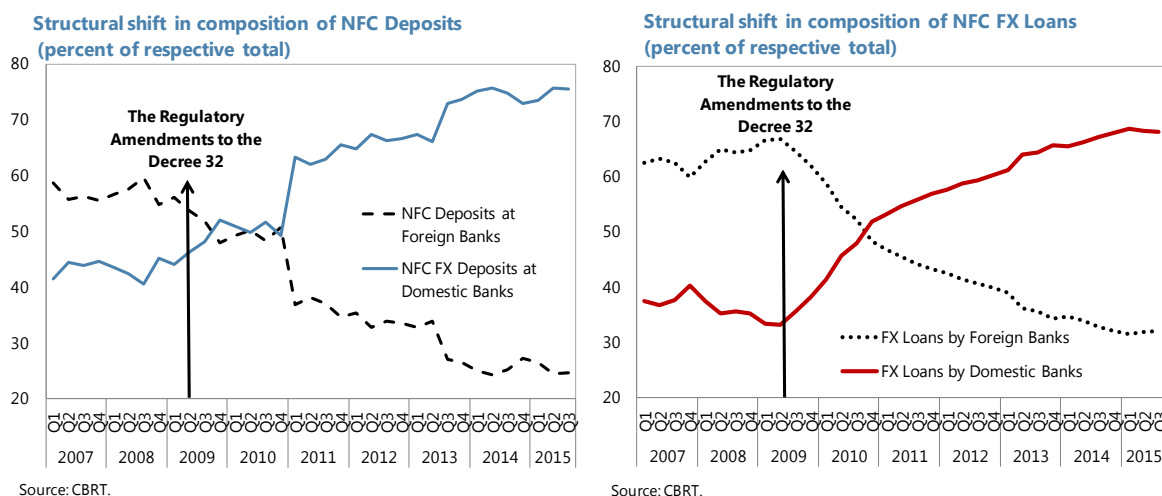
13. **Increased FX indebtedness appears to have been driven by non-manufacturing and lower naturally hedged sectors.** In an analysis of NFC sectors by the asset-weighted historic averages over 2008–14 of (i) exporting capability (gauged by exports over total net sales) and (ii) FX leverage (gauged by FX loans over non-equity liabilities), individual sectors are distributed in the following four quadrants.[1][2]

Sectoral Breakdown by Quadrants (2008)

Source: CBRT.

Sectoral Breakdown by Quadrants (2014)

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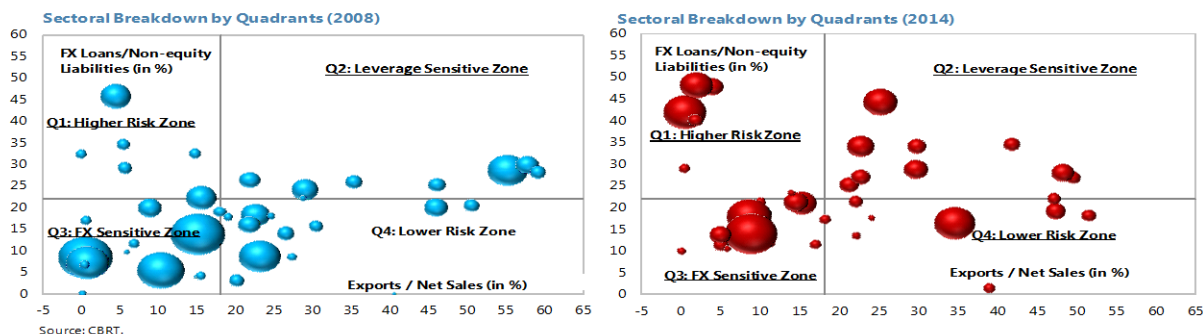
[1] The bubble sizes in the quadrant analysis represent respective asset size of each sector.

[2] Sectoral analyses on NFC indebtedness are based largely on the CBT's Sectoral Accounts Data on NFC which draw on unaudited and aggregated sectoral financial statements submitted to the CBRT by a sample firms. Sample varies on a 3-year rolling basis and does not necessarily represent the entire NFC sector. Therefore, interpretation of results calls for a degree of caution.

- **Higher Risk Zone (Q1)** which includes sectors with higher FX leverage and lower export ratios.
- **Leverage Sensitive or Natural Hedge Zone (Q2)** which includes sectors with higher export and FX leverage ratios.
- **FX Sensitive Zone (Q3)** which includes sectors with both lower export and FX leverage ratios.
- **Lower Risk Zone (Q4)** which includes sectors with higher export and lower FX leverage ratios.

- Available corporate balance sheet data suggest that the overall FX Leverage Ratio (defined as FX Loans-to-Non-equity Liabilities) rose from 14.9 percent in 2008 to 26.2 percent in 2014, while the Export Ratio (defined as Exports-to-Net Sales) declined from 24.1 percent to 19.3 percent. On the other hand, the short term FX loans-to-exports ratio rose by 3.3 percentage points to 15.8 percent over the same period.

- An analysis of sectoral sources of the *changes* in these ratios reveals that the sharp rise in the overall FX leverage ratio was driven significantly by those sectors with lower export ratios, hence weaker natural hedges (i.e., sectors located in Q1 and Q3).[4] On the other hand, the overall export ratio was pulled down mainly by those sectors with relatively strong natural hedge buffers (i.e., those sectors located in Q2 and Q4). The rise in the short term FX loans-to-exports ratio was contributed by almost all sectors with the exception of those sectors located in the higher risk zone of Q1.

- An alternative decomposition based on a classification of manufacturing and non-manufacturing sectors shows that the non-manufacturing sector accounted for a significant share of the deterioration in the FX Leverage and Export Ratios.

14.   However, highly indebted sectors with weaker natural hedging capabilities have improved their maturity profiles. Based on the classification of sectors by quadrants along the lines described above, those sectors with lower export ratios (i.e., the ones in the quadrants Q1 and Q3, accounting for 60 percent of total assets), held around 55 percent of the total FX loans in 2013 and 2014. Whereas, their short term FX loans declined from almost 40 percent in 2013 to 30 percent in 2014 of the overall short term FX loans on the NFC balance sheet.

---

[4] Drivers of changes are calculated along the following formulation:

$Z = \frac{X}{Y}$, where Z is a ratio, while X and Y are levels. In terms of rate of growth:
$(1 + z) = \frac{(1+x)}{(1+y)}$, where x = $\frac{\Delta X}{X}$, y = $\frac{\Delta Y}{Y}$ and z = $\frac{\Delta Z}{Z}$
In terms of percentage point change in Z:

$\Delta Z = Z \left[\frac{\Sigma \Delta X_i}{X} - \frac{\Sigma \Delta Y_i}{Y} - \left(\frac{\Delta Z}{Z} \frac{\Delta Y}{Y} \right) \right]$, where the third term in the bracket is labeled as residual in the charts.

Drivers of the Changes in Key Ratios

FX Loans / Non-equity Liabilities
(Percent)

Contributions to Cumulative Change (in pps)
2.1
10.6
4.9
2.9
-9.2

2008 — 14.9
2014 — 26.2

Residual Q1 Q2 Q3 Q4

Exports/Net Sales
(Percent)

Contributions to Cumulative Change (in pps)
2.0
3.3
-2.5
-0.6
-7.1

2008 — 24.1
2014 — 19.3

Residual Q1 Q2 Q3 Q4

Short Term FX Loans/Exports
(Percent)

Contributions to Cumulative Change (in pps)
1.2
2.4
3.5
-1.1
-2.6

2008 — 12.5
2014 — 15.8

Residual Q1 Q2 Q3 Q4

FX Loans / Non-equity Liabilities
(Percent)

Contributions to Cumulative Change (in pps)
15.3
5.2
-9.2

2008 — 14.9
2014 — 26.2

Residual Manufacturing Non-Manufacturing

Exports/Net Sales
(Percent)

Contributions to Cumulative Change (in pps)
3.3
-2.6
-5.5

2008 — 24.1
2014 — 19.3

Residual Manufacturing Non-Manufacturing

Short Term FX Loans/Exports
(Percent)

Residual
Manufacturing
Non-Manufacturing

Contributions to Cumulative Change (in pps)
1.0
3.4
-1.1

2008 — 12.5
2014 — 15.8

Source: CBRT.

Distribution of Key NFC Aggregates by Quadrants
(Percent of the Respective Corporate Sector Aggregate)

Q1: Higher Risk Zone

2008
2013
2014

Total Assets FX Loans Short Term FX Loans Exports

Q2 : Leverage Sensitive

2008
2013
2014

Total Assets FX Loans Short Term FX Loans Exports

Q3: FX Sensitive Zone

2008
2013
2014

Total Assets FX Loans Short Term FX Loans Exports

Q4: Lower Risk Zone

2008
2013
2014

Total Assets FX Loans Short Term FX Loans Exports
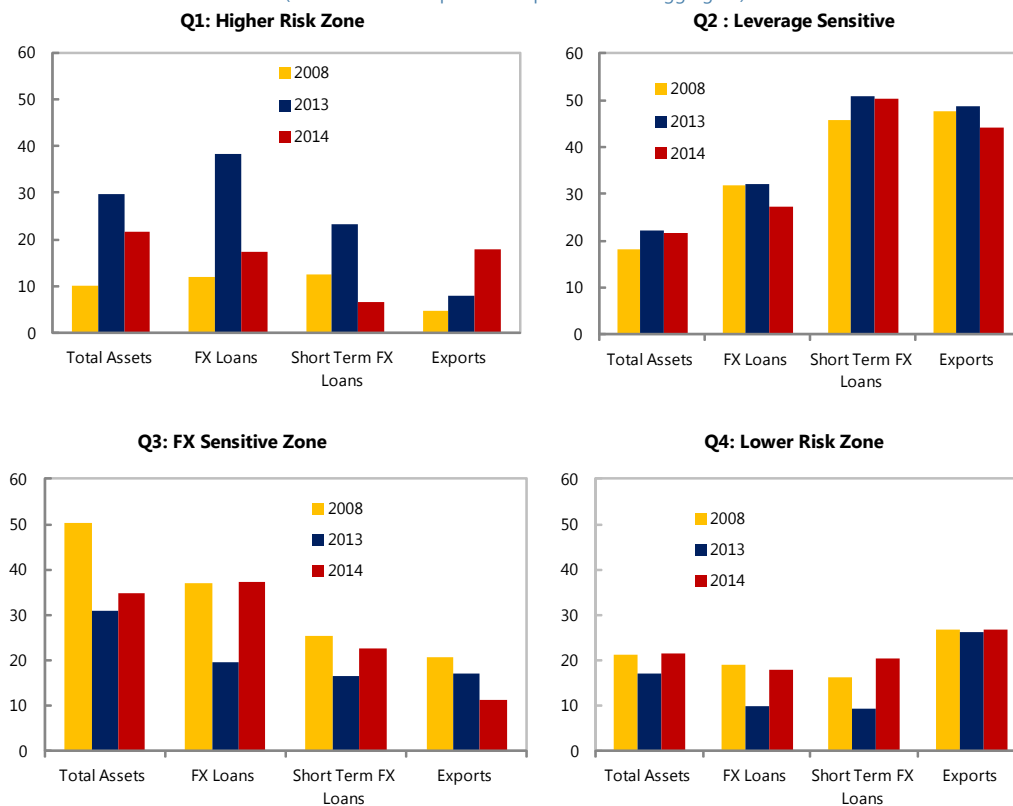
Source: CBRT.

15.   Those sectors with weaker debt service capacity also hold a sizable portion of total FX debt. A similar analysis examined *NFC FX debt at risk*—i.e., the FX debt held by those sectors with a relatively weak debt service capacity (Interest Coverage Ratio (ICR)[5] at or below 1.5). This analysis shows that the share of total FX loans held by sectors with weaker debt service capacity declined from some 29 percent of overall FX loans in 2013 to 20 percent in 2014. The recent improvement is encouraging, but the share is still relatively high.

16.   A strong improvement can be observed in 2014 with regard to short term "FX debt at risk". The portion of short term FX debt held by sectors with weaker debt service capacity declined from 35 percent of overall short term FX debt in 2013 to mere 4.4 percent in 2014 at the assumed ICR threshold of 1.5. If the ICR threshold for weak debt service capacity is set at 1.75, the short term FX debt at risk stands at a higher 21 percent of overall short term FX debt in 2014. This adds an element of caution, as there appear to be a significant number of firms on the cusp of debt servicing difficulties.

Total FX Loans: Debt at Risk
(Percent of total FX loans)

ICR: 1.75-2.0
ICR: 1.5-1.75
ICR: 1.5 and below

Short Term FX Loans: Debt at Risk
(Percent of short term FX loans)

ICR: 1.75-2.0
ICR: 1.5-1.75
ICR: 1.5 and below
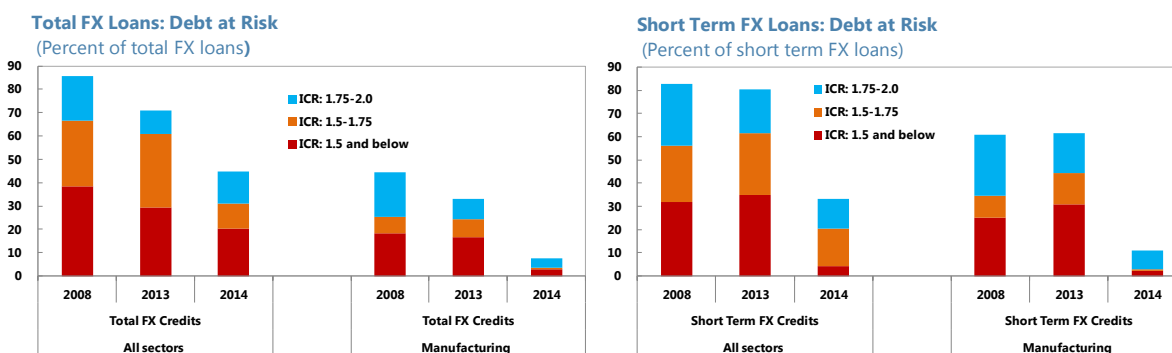
17.   Nevertheless, brittleness associated with debt service capacity remains a source of concern, if further shocks were to materialize. A simple empirical analysis was employed (over 1996–2014) to examine the impact of global risk appetite, real domestic GDP growth, and nominal exchange rate variation on the aggregate ICR. The findings suggest that ICR has a statistically significant positive association with domestic real GDP growth. It has negative associations with VIX and nominal exchange rate volatility, *with the latter having a more pronounced impact on ICR than any other explanatory variable*. A one percentage point increase in the coefficient of variation in exchange rate is associated with a decline of almost 11 percentage points in the ICR while one percentage point increase in real GDP growth is associated with a rise of almost 9 percentage point increase in the ICR. The findings suggest that in an unfavorable combination of shocks to these variables that may arise from heightened global risk aversion, debt service capacity may weaken notably.

---

[5] ICR is defined as the ratio of Earnings Before Interest and Tax (EBIT) to Financial Expenses . Sectors with an ICR at or below 1.5 are assumed to have a weaker debt service capacity as their financial expenses account for at least two thirds of the their EBIT. On the other hand, FX debt at risk is defined as the share of FX debt held by those sectors whose ICR stands at or below 1.5.

Model B: Interest Coverage Ratio (ICR)[6]

	(Model 1) ICR	(Model 2) ICR	(Model 3) ICR	(Model 4) ICR	(Model 5) ICR
Real GDP	8.631*				2.425
	(1.99)				(0.53)
Exchange Rate Variation		-10.88**			-8.379*
		(-3.68)			(-2.11)
VIX			-6.916*		-1.571
			(-1.87)		(-0.42)
REER				4.601*	1.769
				(1.81)	(0.70)
Constant	208.5***	333.9***	245.0***	234.3***	299.5***
	(7.82)	(11.44)	(12.39)	(11.35)	(6.63)
Number of Observations	19	19	19	19	19
Adjusted R-Squared	0.14	0.41	0.12	0.15	0.35

t statistics in parentheses
* $p<0.1$, ** $p<0.05$, *** $p<0.001$

18.   Higher NFC FX leverage may constrain firm-level investment by pressuring profitability. Based on sectoral balance sheet data, an empirical analysis was conducted over 1997–2014 to shed light on linkages between NFC profitability, tangible investments, and total bank borrowing.[7] The analysis suggests a statistically significant negative association between net profit margin and borrowing. For instance, a one percentage point increase in the leverage ratio is associated with a 0.40 percentage point decline in the net profit margin. This is likely to be driven by a direct effect (higher financial expenses), as well as an indirect effect (resorting to more leverage as retained earnings fall). Empirical findings indeed also suggest a statistically negative association between leverage and tangible asset investment over the studied period, which speaks to the profitability-leverage linkages discussed above. Furthermore, in years of high leverage, real exchange rate appreciations appear to reduce the leverage ratio, possibly due to valuation effects as the real appreciation may lower local currency value of FX leverage and in turn the leverage ratio which is defined as total loans-to-total liabilities.

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[6] Please see Annex for model specification and variable definitions with descriptive statistics.

[7] FX loans comprise 62 percent of total NFC sample loans as of 2014.

Model C: NFC Total Leverage[8]

|	(Model 1) Δ Investment	(Model 2) Δ Profit	(Model 3) Δ Leverage
Δ Profit	0.378		
	(1.11)		
Δ Leverage		-0.396**	
		(-3.07)	
Δ Investment			-0.992***
			(-7.78)
Δ Export			0.224**
			(2.89)
Δ Real Exchange Rate x Leverage			-1.169***
			(-5.36)
Δ Real GDP Growth Rate			0.206**
			(3.45)
Constant	-0.407	0.154	0.0636
	(-0.70)	(0.45)	(0.24)
Number of Observations	18	18	18
Adjusted R-Squared	0.01	0.33	0.83

t statistics in parentheses

* p<0.1, ** p<0.05, *** p<0.001

C. Implications

Short term implications

19.   The banking system's balance sheet exposure to NFC has risen substantially. The share of corporate debt (including TL and FX loans) extended by domestic banks' on-shore branches (resident banks) rose from 59 percent in 2008 to 81 percent of total corporate debt in September 2015. This brings the outstanding corporate debt stock held by the resident banks to 56 percent of GDP, almost triple its 2008 share. NFC total and FX deposits accounted for 32 percent and 15 percent of the banking sector total

NFC Financial Debt by Creditors
(Percent of GDP)

Sources: BRSA; and CBRT.

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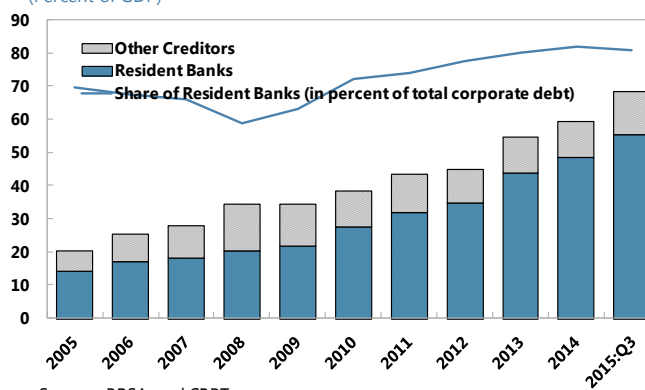
[8] Please see Annex for model specification and variable definitions with descriptive statistics.

non-financial deposits respectively, in September 2015.

20.   NPL ratios for corporate loans have so far remained resilient. Despite slower growth and

several episodes of
currency depreciation
since 2008, NPL ratios
have remained low.[9] At
0.1 percent of total FX
loans, the NPL ratios for
NFC FX loans remained
very small compared to
the NPL ratio for TL loans
that hovered around
5 percent, which in part
relates to banks sales of

NPL Ratios for NFC Loans 1/
(Percent of gross loans)

Source: BRSA
Note: 1/ Shaded areas reprsents those periods of exchange rate depreciation of at least 20 percent from trough to peak.

NPLs to the private asset management companies and regulatory forbearance arrangements,
including reclassification of FX NPLs in TL terms. The existing banking regulations allow the
non-performing FX loans to be re-classified as a non-performing TL loan at the discretion of
borrower firms.
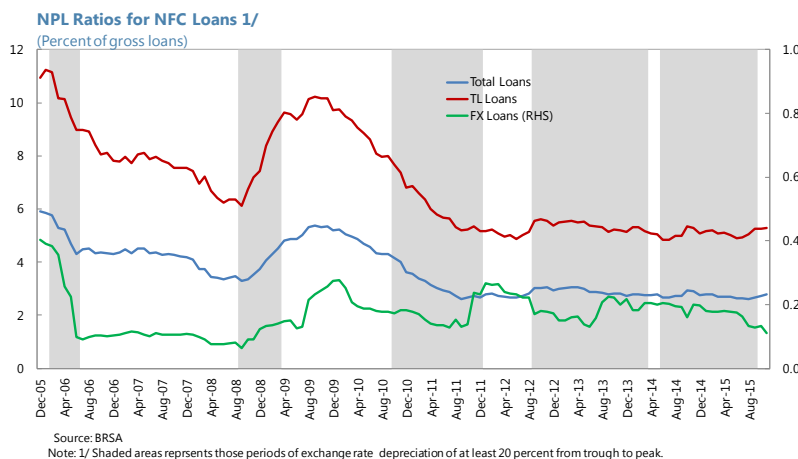
**21.   However, heterogeneity in sectoral NPL patterns is notable, with concentration and
credit risks for some**

sectors. Construction and
wholesale trade, which
have higher than average
NPL ratios also account for
much larger shares within
total sectoral loans and
NPLs compared with other
sectors. In terms of
concentration of FX loans,
energy, construction, and
wholesale and retail trade
sectors (which are not
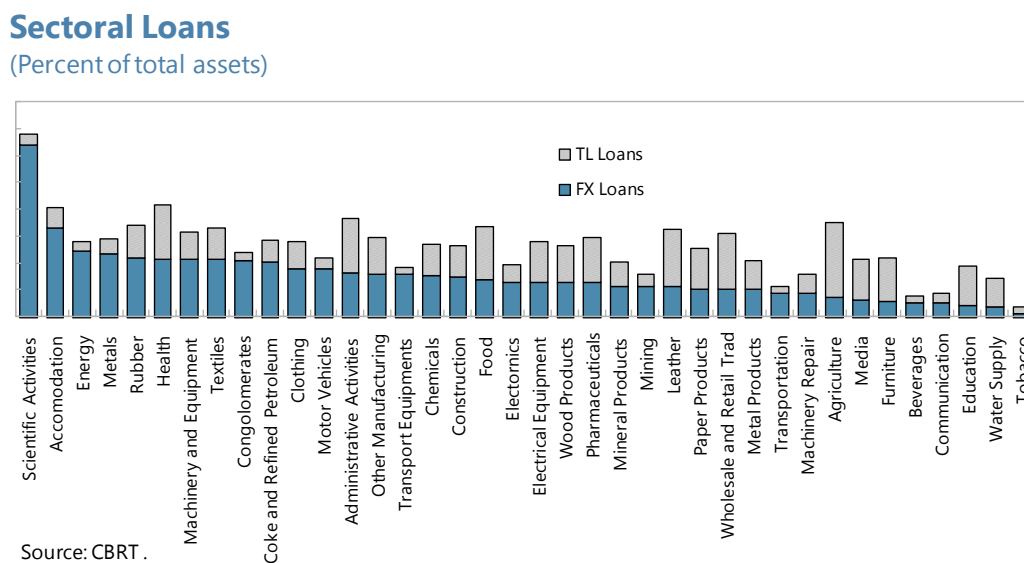highly "tradable") hold
significantly more

Sectoral Loans and NPLs - September 2015
(Percent of respective NFC totals)

Source: BRSA.
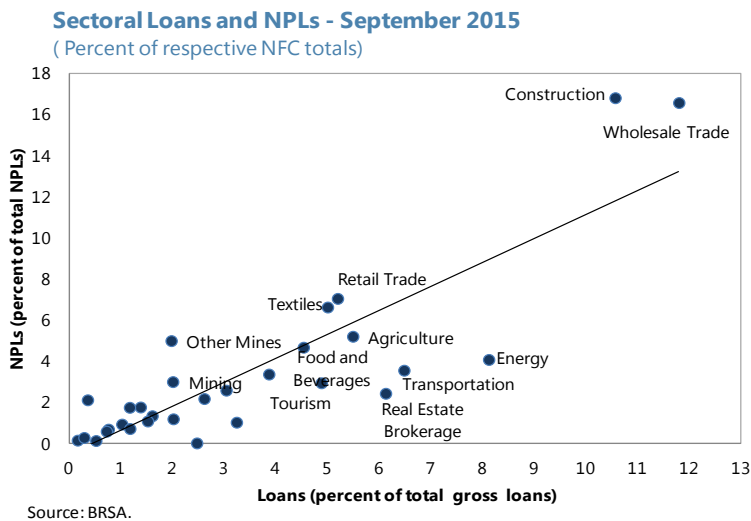
concentrated portion of FX loans, altogether accounting for one third of total NFC FX loans.

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[9] NPL ratios exclude NPL sales to private asset management companies but include the effect from reclassification of NPLs in TL
terms.

22.   The large NFC open FX position creates indirect exchange rate risk for the banking sector. Recalling two central observations from the preceding section—that FX denominated debt appears to have increasingly permeated sectors that are less naturally hedged, and may also have relatively weaker debt service capacity—an unfavorable protracted exchange rate shock, particularly when combined with a less favorable interest rate environment, could trigger financial stress and deleveraging pressures for NFCs. This translates to both heightened credit risk, and also possible pressures on wholesale funding for the banking sector. Pressures from both channels may subsequently generate powerful adverse feedback loops in case of tightening of bank lending to the NFC.

Sectoral FX Loans
(Percent of Total FX Loans, 2014)

Source: CBRT Sectoral Accounts.
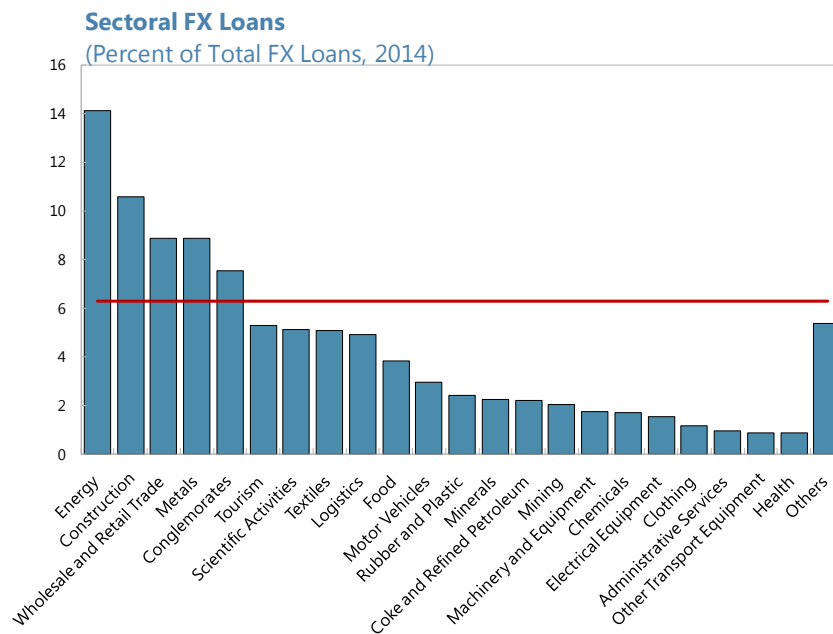
Sectoral Loans
(Percent of total assets)

Source: CBRT .

23.   Recent trends point to the possibility of increased risk aversion among banks and firms. Over 2015, banks began to tighten lending standards in line with heightened risk perceptions on industry or firm specific outlook. In addition to tighter credit standards on the supply side, firms' demand for FX loans also started to decline, implying possible risk aversion on both the supply and demand side.[10]

Banking Sector Risk Perceptions vs FX Loan Growth 1/
(Y-o-y, ER-adjusted)
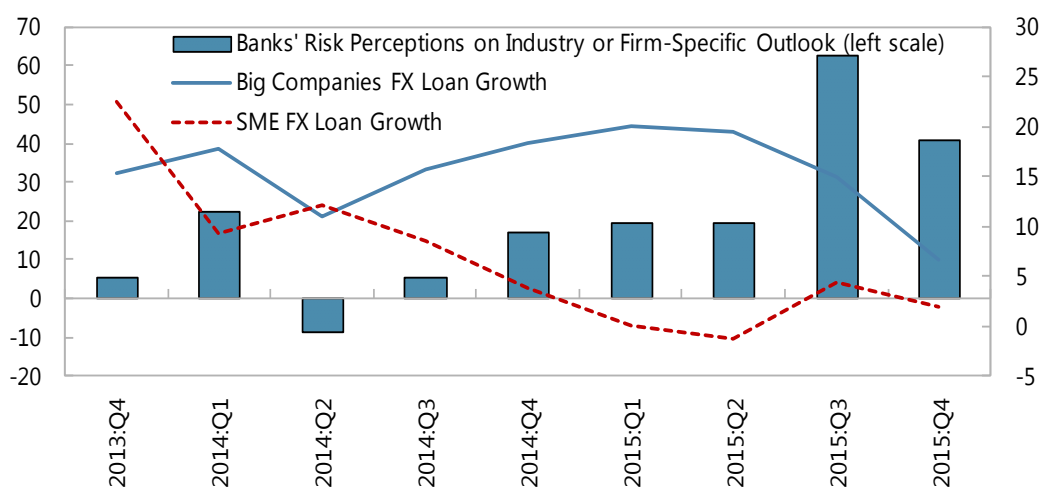
Source:s BRSA, CBRT, and Bank Loans Tendency Survey.
Note: 1/ Banking sector risk perceptions are derived from the CBRT Bank Loans Tendency Survey.
Positive values represent tighter bank lending standards.

Medium term implications

24.   Despite rising NFC leverage, private investment growth has remained muted. Against the backdrop of subdued private investment since late 2011, NFC total loans continued to grow in real and exchange rate-adjusted terms by 11 percent yoy in 2015:Q3, suggesting an apparent disconnection between NFC loan growth and private investment, mirroring empirical findings presented in the preceding section. Continued NFC total loan growth despite the prolonged weakness in private investment demand may in part relate to firms' lower operational profitability and increased working capital needs that may arise in a slower growth environment.

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[10] In loan data by company size, FX indexed loans are included in TL Loans.

25. The same disconnection between higher leverage and subdued investment may also relate to refinancing needs linked to increased debt service expenses in the wake of prolonged exchange rate weakness. Indeed, the CBRT's Bank Loans Tendency Survey suggests that the NFC sector's financing need for fixed investments has declined, while firms have tended to borrow more for working capital and debt restructuring purposes, which may be a sign of increased NFC balance sheet strains.

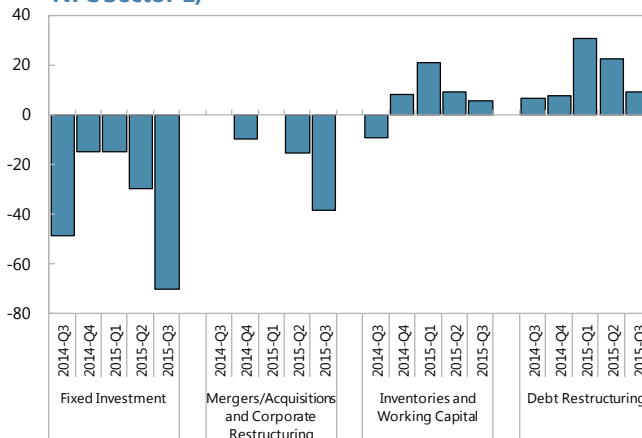**Corporate Credit and Private Fixed Investment Growth**

Real Total Bank Loans

Real Private Investment Growth

Exchange Rate Basket (%50 US$ + 50% EUR, eop, RHS)
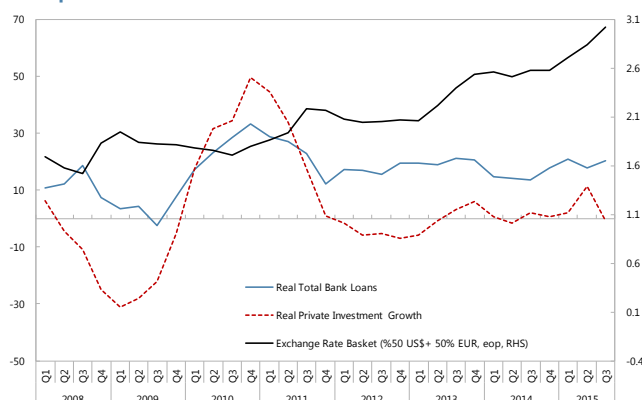
Sources: BRAS; CBRT; and TURKSTAT.

26. **A persistent disconnection between NFC borrowing and private investment may have implications for medium term growth potential.** Subdued private investment against the backdrop of increased NFC debt suggests that higher leverage may not have been adequately channeled into productive investment during a relatively prolonged period of favorable external financing conditions. Stretched balance sheets through the accumulation of leverage without a meaningful rise in productive capital accumulation may have a dampening effect on potential growth—a matter of significance for policy, given the high priority placed on convergence to high income country status.

Bank Loans Tendency Survey Financing Needs of NFC Sector 1/

Fixed Investment

Mergers/Acquisitions and Corporate Restructuring

Inventories and Working Capital

Debt Restructuring

Source: CBRT.
Note: 1/Derived from the Bank Loans Tendency Survey. Positive values imply increase in demand and negative values imply decrease in demand.

D. Summary and Policy Recommendations

27. **NFC debt in Turkey has increased substantially, with increasing risks specifically in certain sectors.** The increase in NFC debt has been proportionally higher than in many other EMs, and driven primarily by the rise in NFC FX leverage. With NFC FX asset accumulation that fell far short of the rise in FX leverage, higher NFC FX leverage meant a large and widening net open FX position. FX debt may have become more concentrated in those sectors which are cyclically more sensitive, with lower export capabilities, and with weaker debt service capacity. Furthermore, potentially financially-constrained SMEs hold a notable portion of the NFC FX debt. The NFC sector

has remained resilient so far, but exchange rate weakness, and higher borrowing costs—particularly if combined with slower growth—could unmask an underlying brittleness in the economy. Increased NFC indebtedness may also constrain corporate profitability and in turn constrain firms' tangible asset investments. In the short term, higher NFC FX leverage and ensuing large open FX position poses an indirect exchange rate risk for the banking sector, via credit risk. In this sense, the resilience of the banking sector has mirrored that of the NFC sector. From a macroeconomic perspective, if NFC indebtedness fails to translate into productive private investment, medium term growth potential may also be affected.

28.   The following policy options may be worth consideration:

- *Fill data Gaps.* For a timely and accurate assessment of financial soundness of the NFC sector, authorities may consider identifying and bridging data gaps with more granular data particularly on NFC cross-border assets and exposures, on-balance sheet currency and maturity mismatches, off-balance sheet financial hedging activity, and corporate bond issuances.

- *Assess NFC financial soundness.* The Authorities may consider conducting periodic financial soundness assessments on the NFC sector.

- *Re-assess regulatory arrangements*. Regulatory arrangements that allow FX lending to firms with no FX income may be re-assessed. Bring the prudential regulation for FX-indexed loans in line with that for FX loans.

- *Strengthen macroprudential measures.* Macroprudential measures that currently apply to commercial loans may be tightened. Further macroprudential measures may also be considered in the form of risk-weighted capital requirements, incremental provisioning requirements, and concentration limits with a view to contain NFC FX leverage and more efficient bank lending to financing of firms productive fixed investments.

- *Revisit the tax bias for debt financing.* The Authorities may consider measures to further reduce tax code's debt bias over equity finance by the NFC sector.

Appendix I. Econometric Specifications

Model A: NFC FX Loans

$$\text{NFC FX Loans}_t = \beta_0 + \beta_1 \text{REER}_t + \beta_2 \text{Real GDP}_t + \beta_3 \text{Lending Rate Spread}_{t-1} + u_t$$

$$\text{NFC FX Loans}_t = \beta_0 + \beta_1 \text{REER}_t + \beta_2 \text{Lending Rate Spread}_{t-1} + \beta_3 \text{Real Private Investment}_t + \beta_4 \text{Capital Flows}_t + + u_t$$

Variable	Observations	Mean	Std. Dev.	Min	Max
NFC FX Loans	32	19.18	16.68	-20	44
REER	32	-953	3.65	-8.2	5.3
Real GDP	32	3.41	5.58	-14.74	12.59
Lending Rate Spread	31	4.30	41.68	-64.8	103.1
Δ Real Exchange Rate	32	3.56	19.20	-31.21	49.48
Capital Flows	31	-14.58	139.0	-376	189

Variable Definitions

NFC FX Loans	: Annual change in NFC FX loans (in US$ billions)
REER	: Annual change in the 1.5-year MA Real Effective Exchange Rate Index (PPI-based, in percent y-o-y)
Lending Rate Spread	: Annual change in domestic commercial lending spread of average TL lending rate over US$ lending rate (adjusted for expected rate of depreciation, in percent y-o-y)
Capital Flows	: Annual change in 4-quarter rolling exchange rate-adjusted cross-border flows to the non-bank sector in all EMs global (in US$ billions)
Real GDP	: Annual change in real quarterly GDP (in percent y-o-y)
Real Private Investment	: Annual change in real quarterly Private Investment (in percent y-o-y)

Data Sources: BIS, TURKSTAT, CBRT Sectoral Accounts Database, quarterly data over 2007:Q4 – 2015:Q3

Model B: Interest Coverage Ratio (ICR)

$$\text{ICR}_t = \beta_0 + \beta_1 \text{Real GDP}_t + \beta_2 \text{Exchange Rate Variation}_t + \beta_3 \text{VIX}_t + \beta_4 \text{REER}_t + u_t$$

Variable	Observations	Mean	Std. Dev.	Min	Max
ICR	19	244.3	91.92	98.88	428.9
Exchange Rate Variation	19	8.23	5.62	1.35	23.69
Real GDP Growth Rate	19	4.16	4.62	-5.69	9.38
Volatility Index	19	.094	5.47	-8.92	15.16
Δ Real Exchange Rate	19	1.34	6.75	-15.14	9.23

Variable Definitions

ICR Ratio	: Annual EBIT (Earnings Before Interest and Tax)-to-Financial Expenses Ratio
Exchange Rate Variation	: Annual Coefficient of Variation for the daily exchange rate
	(TL per FX basket composed of 50 percent US$+50 percent EUR)
Real GDP Growth Rate	: Annual GDP Real Growth Rate
Δ Real Exchange Rate	: Annual change in REER Index (CPI Based, 1994=100)
Volatility Index	: Annual Chicago Board of Exchange Volatility Index (VIX)

Data Sources: TURKSTAT, CBRT Sectoral Accounts Database, annual data over 1996–2014.

Model C: NFC Total Leverage

$$\Delta \text{Leverage}_t = \beta_0 + \beta_1 \Delta \text{Investment}_t + \beta_2 \Delta \text{Export}_t + \beta_3 \Delta \text{Reer x Leverage}_t + \beta_4 \Delta \text{GDP Growth}_t + u_t$$

Variable	Observations	Mean	Std. Dev.	Min	Max
Δ Investment	18	-.388	2.46	-4.24	5.26
Δ Profit	18	.0487	1.74	-3.29	4.01
Δ Leverage	18	.265	2.68	-4.94	5.23
Δ Export	18	.321	3.85	-2.95	13.98
Δ Real Exchange Rate x Leverage	18	.178	1.77	-3.82	4.42
Δ Real GDP Growth Rate	18	-.228	6.76	12.47	13.98

Variable Definitions

Δ Leverage	: Annual change in the Total Loans-to-Total Liabilities ratio
Δ Profit	: Annual change in the Net Profit-to-Net Sales ratio
Δ Investment	: Annual change in Tangible Assets (Before Depr.)-to-Total Assets (Before Depr.) ratio
Δ Export	: Annual change in Export-to-Net Sales ratio
Δ Real Exchange Rate x Leverage	: Annual change in REER (PPI Based) x Leverage Ratio
Δ Real GDP Growth Rate	: Annual change in GDP Real Growth Rate

Data Sources: TURKSTAT, CBRT Sectoral Accounts Database, annual data over 1997–2014.

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POTENTIAL OUTPUT[1]

After a decade of strong economic growth following the 2001-crisis, Turkey has experienced a slowdown in growth since 2012. A central question is to what extent this is a cyclical phenomenon or whether potential output growth has slowed. This Selected Issues Paper finds that after several years above 4 percent, potential output growth slowed during the global financial crisis and has remained lower since then. In the early 2000s, the main driver of potential output growth was total factor productivity growth. During the mid-2000s this was replaced by strong capital growth rates, and from 2008 also higher potential employment growth—mainly as result of growth in the female labor force participation rate. Going forward, potential employment growth and capital growth are expected to contribute less than during 2008–14, with capital growth likely constrained as access to financing from abroad could become more challenging. We therefore expect that potential output growth from 2015–20 will be lower at 3–3½ percent. Importantly, with labor and capital contributing less than from 2008–14, maintaining such growth rates, requires a return to positive total factor productivity growth and continued access to external financing to finance investment unless domestic saving increases. Reforms that can increase future potential growth include policies to increase the domestic savings rate and the low female labor force participation rate as well as reforms that allow the convergence of total factor productivity to the level of advance economies to speed up.

A.   What is Potential Growth?

1.   Following IMF (2015), we define potential output as the "level of output consistent with stable inflation (no inflationary or deflationary pressure)". We use an economic definition of potential output as in IMF (2015), where potential output growth is estimated using an explicit theoretical economic model. This differs from methods that rely solely on filtering techniques of output data to determine trend output. We apply a simple model (Blagrave and others, 2015) that takes into account the relationships between inflation, unemployment and potential output, which thus gives a theoretical foundation for the potential output estimates instead of using a concept of trend output as a proxy for potential output.

2.   Potential output growth is not necessarily sustainable output growth. Easy access to financing from abroad allows investment to temporarily exceed the domestic saving rate substantially (i.e., the current account deficit is large). This allows a higher capital stock growth, than what can be supported by domestic saving, and thus allows for higher potential output growth. However, this might not be sustainable if it comes with an unsustainable increase in external debt. In the absence of policies to actively increase domestic saving, correcting the external imbalance will likely imply an increase in the cost of external financing. As IMF (2014) shows, such a correction reduces the current account deficit mainly through lower investment. This matters for potential output growth as capital stock growth falls when the level of investment is reduced to a lower (more

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[1] Prepared by Uffe Mikkelsen.

sustainable) level. It also implies that estimates of future potential growth, narrowly defined as above, will depend on an assessment of the access to external financing (the ability to run large current account deficits) and the level of domestic savings (which depends on policies). In the same way that temporarily easy access to external financing can allow potential output growth to exceed the sustainable output growth a domestic credit boom can also lead to periods of unsustainably high potential growth rates.

## B. Estimating Potential Output

3.   A multivariate filtering (MVF) approach is used to estimate past and future potential output growth. The model incorporates the relationship between the output gap (the deviation of output from its potential level) and inflation and (the Phillips curve) as well as the relationship between unemployment and the output gap (Okun's law). For Turkey these relationships are estimated to be:

$$\pi_t = 0.50\pi_{t+1} + (1 - 0.50)\pi_{t-1} + 0.30\hat{y}_t$$
$$\bar{U}_t - U_t = 0.30\hat{y}_t + 0.32(\bar{U}_{t-1} - U_{t-1})$$

π is the inflation rate, $\hat{y}$ is the output gap, U is the unemployment rate, and $\bar{U}$ is the structural unemployment (the non-accelerating inflation rate of unemployment, NAIRU). A higher level of inflation or unemployment below NAIRU will thus be associated with a positive output gap. In addition to the two equations above, the model includes stochastic processes for (the level and growth rate of) output, the output gap, and (the level and growth rate of) unemployment (see IMF, 2015 and Blagrave and others, 2015 for details). Using data for 1998–2014 and near and medium term staff projections through 2020 for output, inflation, and unemployment, the model gives estimates of past and future potential output and NAIRU.

4.   The estimates show a slowdown in potential output growth since before the global financial crisis. For 2007–20 the estimate of potential GDP growth using the multivariate filtering technique gives similar results as the trend GDP growth rates obtained from a simple Hodrick-Prescott (HP) filter using only data on real GDP. Both approaches show that potential output growth slowed to 3 percent in 2009, then rebounded to around 4 percent from 2010–13 (see text chart), and slows to 3–3½ percent from 2014. However, estimates for future potential growth rates are highly sensitive

Estimates of Potential Output Growth
(Percent)

Sources: Staff estimates
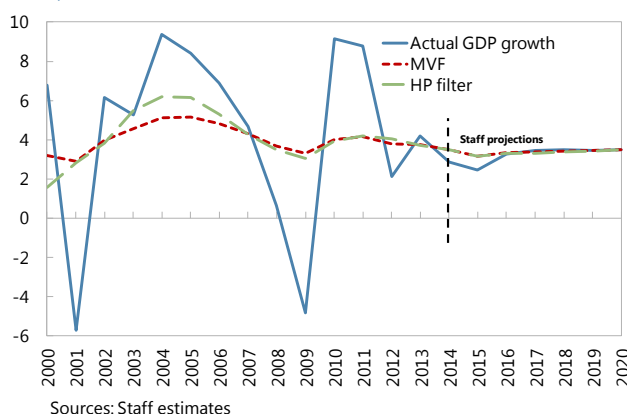
to staff's projections for actual real GDP growth, which show medium term growth of about 3½ percent. For the period   2003–06, the HP filter shows about one percentage point higher potential output growth rates compared to the MVF approach.

C.   Main Potential Growth Drivers Since 2002

5.   **To determine the main drivers of potential output growth, a production function approach is applied.** Potential output, as estimated in section B, is assumed to be a (Cobb-Douglas) function of total labor and capital input in production as well as their total factor productivity (TFP):

$$\bar{Y}_t = \bar{A}_t K_t^{\alpha} \bar{L}_t^{1-\alpha}$$

$\bar{Y}$ is potential output and is obtained from the filtering technique discussed above. K is the capital stock, which is obtained from the OECD data. $\bar{L}$ is potential employment. $\bar{A}$ is potential TFP, which is obtained as the residual from the production function. α is the share of capital in the production, which we set at 0.5. This is in line with the findings of e.g., Chen (2010) for developing economies and Ungor (2014), Altuğ and others (2008), Ismihan and Metin-Özcan (2009), and Tiryaki (2011) for Turkey. Potential employment is a function of working age population, labor force participation, and the structural unemployment rate (NAIRU):

$$\bar{L}_t = (1 - \bar{U}_t)W_t\overline{LFPR}_t$$

where $\bar{U}$ is the NAIRU, W is working age population, and $\overline{LFPR}$ is the trend labor force participation rate. NAIRU is estimated as part of the estimation of potential output using the MVF approach. Data for working age population and labor force participation are from the UN and OECD respectively.

6.   **In the early 2000s potential output growth was strong and driven by high TFP growth.** From 2001 to 2004, potential output growth increased from 3 percent to 5 percent. Capital growth was low as result of a low level of investment in productive capital at around 9 percent of GDP[2]. And with the contribution from potential employment also limited in those years, the main driver of the higher potential growth was TFP growth, which contributed   3–4 percentage points. However, part of the reason for the strong TFP growth following the 2001 crisis was also that capacity utilization—which is not taken into account explicitly and therefore included in TFP—increased strongly from 70 percent in 2001 to 80 percent in 2004.

7.   **During the mid-2000s, potential output growth remained high but its composition shifted from TFP growth to capital growth.** Investment in productive capital almost doubled as a share of GDP and reached 15 percent of GDP in 2005–06; capital growth went from contributing ½ percent in 2003 to over 3 percent in 2007–08. As the domestic savings rate did not increase

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[2] As a measure of productive capital we use private and public investment in machinery and equipment from the national accounts data (i.e., construction investment is excluded).

during these years, the higher level of investment in real productive capital was financed solely from abroad—the current account thus went from balance in 2002 to a 6 percent of GDP deficit in 2006. With potential employment growth roughly stable from 2002–07, the sharp increase in the contribution from capital growth implies that the contribution of potential TFP growth slowed in the run-up to the global financial crisis.

Capacity Utilization Rate
(Percent)
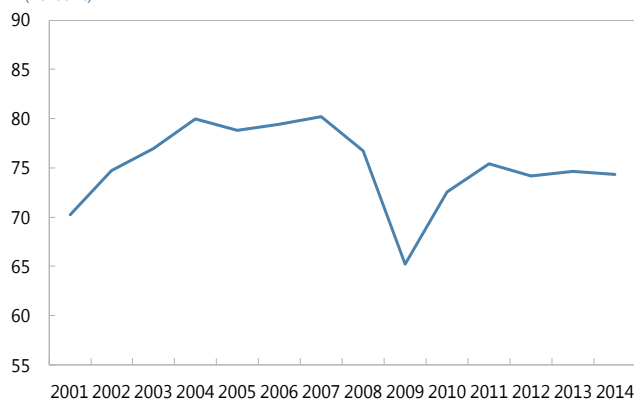
Source: Haver Analytics.

Potential Output Growth Decomposition
(Percent)
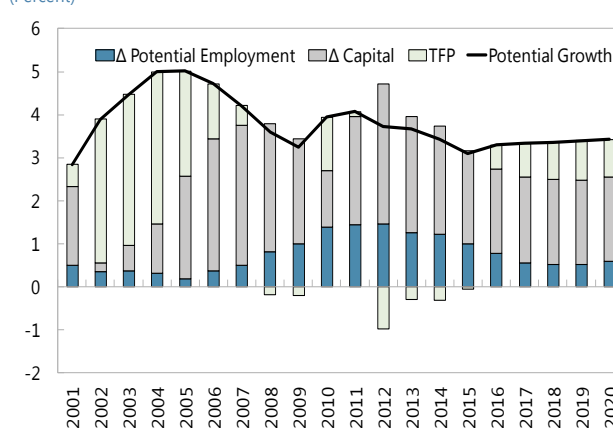
Source: IMF staff estimates.

8. **Potential output growth started to decline in 2006, declined further going into the global financial crisis, and has remained lower since—mainly as result of lower potential TFP growth.** Investment, and thereby capital stock growth, quickly rebounded following temporary slowdown in 2008–09. Potential growth was further supported by strong growth in potential employment with labor force participation increasing from 46 percent in 2007 to 50 percent in 2013—this was the result of a sharp 7 percentage point increase in female labor force participation (and the female employment rate). With both capital and labor growing strongly on average from 2006–14, the slowdown

Potential Output Growth and Its Drivers, 2002-20				
Period	Potential growth	Labor	Capital	TFP
2002-03	4.2	0.4	0.4	3.4
2004-05	5.0	0.3	1.8	3.0
2006-07	4.5	0.4	3.2	0.9
2008-10	3.6	1.1	2.3	0.3
2011-14	3.7	1.3	2.7	-0.4
2015-20	3.3	0.7	2.0	0.7

Note: From the production function, $\ln(Y_t) - \ln(Y_{t-1}) = [\ln(A_t) - \ln(A_{t-1})] + \alpha[\ln(K_t) - \ln(K_{t-1})] + (1-\alpha)[\ln(L_t) - \ln(L_{t-1})]$, which implies that (approximately) $\%\Delta Y_t = \%\Delta A_t + \alpha\%\Delta K_t + (1-\alpha)\%\Delta L_t$.

in potential output growth can be exclusively attributed to declining TFP growth—as shown in IMF (2015) slower TFP growth since the global financial crisis is a general pattern for EMs (excluding China).

D. Future Potential Growth

9.   Potential output growth is expected to average 3–3½ percent from 2015–20 under current policies. Potential employment growth is expected to contribute ½–1 percent to potential output growth, which is lower than the high growth rates in 2008–14 but higher than before 2008. Capital stock growth is expected to contribute about 2 percent to potential output from 2015–20, which is lower than during the years leading up to, during, and after the global financial crisis. With about 2½–3 percent contribution from capital and labor, potential TFP growth of ½–1 percent is necessary for Turkey to achieve a potential output growth of 3–3½ percent going forward. This is a significant increase from the negative growth rates after the global financial crisis but less than during the first half of the 2000s.

10.   The slowdown in future potential employment is mainly the result of a slowdown in the labor force participation growth. As mentioned earlier, growth in potential employment contributed strongly to potential output growth after 2007 as result of increased labor force participation. To estimate future potential employment, we use the United Nations population projections to determine the growth rates of the future working age population. For future trend labor force participation, a cohort based model is used (Aaronson and other 2014 and Balleer, Gomez-Salvador, and Turunen, 2014, see also IMF, 2015). Labor force participation for age group, a, gender g, at time t is determined as:

$$\log LFP_{a,g,t} = \alpha_{a,g} + \sum_{b=1930}^{1980} \beta_{b,g} I_{a,t} (t - a = b) + \lambda_{a,g} trend + \delta_{a,g} trend^2$$

where $\alpha_{a,g}$ is the (age and gender specific) constant, $I_{a,t}$ is a dummy that takes the value 1 if the individual at age a at time t was born in the year b (cohorts for 5 year intervals are used). $\beta_{b,g}$ thus captures the marginal effect on labor force participation of being born in year b (the cohort effect). Finally, a trend (linear and squared) is included (the effect of which are age and gender specific). The model is estimated separately for each gender with data from 1990 to 2014 for labor force participation for the age groups 15–24, 25–34, 35–54, 55–64, and 65+ years. For projections for future years, the trend is kept constant at its 2014 level. The labor force participation rate of different age group remains roughly constant after 2015, as it changes only as result of cohorts moving into different age groups. The strong upward trend in female labor force participation observed from 2007–12 is thus not assumed to continue after 2015.

Dependent Variable: Female Labor Force Participation					
	Age 15-24	Age 25-34	Age 35-54	Age 55-64	Age 65+
Constant (a)	-0.9	-1.0	0.3	0.0	-0.1
Trend	-0.05	-0.05	-0.07	-0.04	-0.02
Trend²	0.0013	0.0020	0.0022	0.0012	0.0001
Cohort effects					
(not age dep.)	*1930*	*1935*	*1940*	*1945*	*1950*
	0.33	0.35	0.04	-0.06	-0.19
	1960	*1965*	*1970*	*1975*	*1980*
	0.08	0.00	0.01	0.03	0.01

(*1955*: -0.06)

Dependent Variable: Male Labor Force Participation					
	Age 15-24	Age 25-34	Age 35-54	Age 55-64	Age 65+
Constant (a)	-0.2	0.0	0.0	-0.4	-1.1
Trend	-0.04	0.00	0.23	-0.01	-0.04
Trend²	0.0010	0.0000	0.0004	0.0009	0.0010
Cohort effects					
(not age dep.)	*1930*	*1935*	*1940*	*1945*	*1950*
	0.23	0.23	-0.01	-0.04	-0.13
	1960	*1965*	*1970*	*1975*	*1980*
	0.02	0.00	0.00	-0.01	0.01

(*1955*: -0.01)

11.   The overall labor force participation rate declines slightly after 2017 as result of overall population ageing. The share of the 55+ year olds in the total population—who have a low participation rate—increases, whereas the share of the 15–34 year olds declines. Together with United Nations estimates of the future working age (15+ years old) population—which show a   1–1½ percent annual growth on average from 2015–20—and the NAIRU estimates from the MVF, this gives a more modest potential employment growth from 2015–20 than what was observed from 2008–14.

Trend and Actual Labor Force Participation Rates
(Percent)
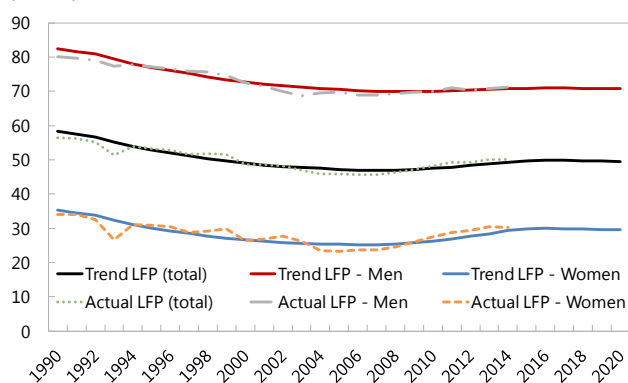
Sources: OECD, United Nations, and IMF staff estimates.

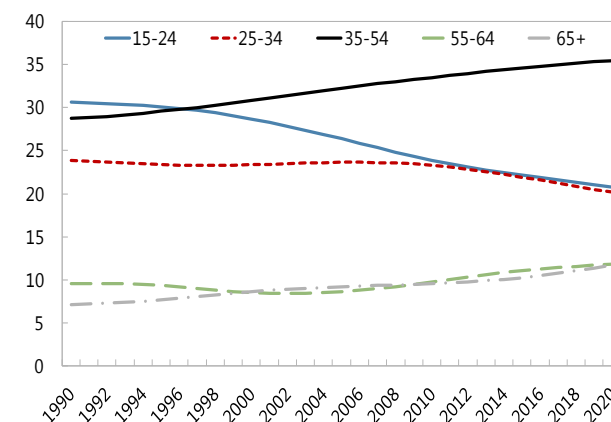**Potential Employment Growth Decomposition**
(Percent)
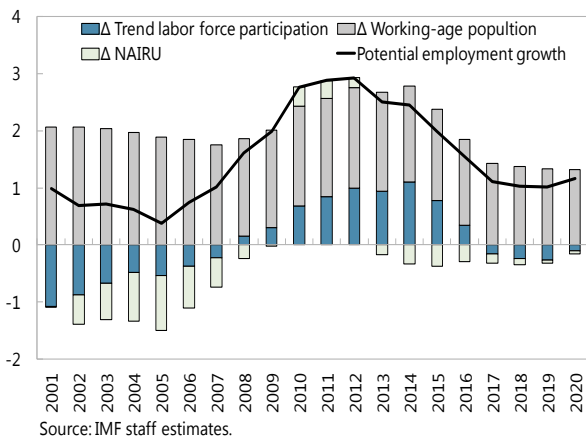
Source: IMF staff estimates.

**Population Share of Difference Age Groups**
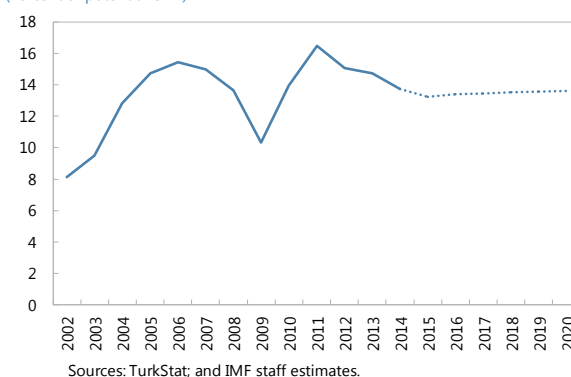(Percent of total population over age 15)

Sources: UN, World Population Prospects: The 2012 Revision.

12.   Capital growth is expected to contribute less than during the last decade. After the increase of the investment rate in the early and mid 2000s—mainly financed through higher current account deficits—capital growth remained high until 2011 only interrupted by a brief slowdown in 2009. However, after investment peaked at 16 percent in 2011, it has stagnated and as a share of GDP slowed to less than 14 percent in 2014. Staff expects the investment rate to decline slightly as the 1 percent of GDP narrowing of the current account between 2014 and 2020 is not expected to be driven by increased domestic savings. Only if the external financing environment allows for an increased level of investment or if structural reforms or fiscal consolidation succeed in raising the domestic savings rate will the capital growth be able to contribute further to potential output growth.

Capital Growth and its Components
(Percent)

Sources: OECD, TurkStat, and IMF staff estimates
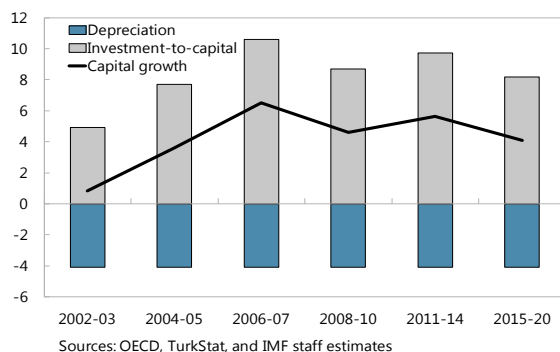
Investment in Productive Capital
(Percent of potential GDP)

Sources: TurkStat; and IMF staff estimates.

13.   TFP growth is assumed to increase compared to recent years but remain lower than during the early 2000s. As has been the case in EMs in general (excluding China) TFP growth has been on a declining trend since the beginning of the global financial crisis. We assume that TFP growth will increase from its negative contribution since the beginning of the global financial crisis but remain lower than during the rapid convergence experienced during 200–205. Turkey's per capita income leading up to this episode was less than 10 percent of that of the United States and increased strongly to 20 percent by 2008 and has remained at that level since. While this gives some justification why the convergence speed is likely to be lower going forward than in the early 2000s, any estimate of future potential TFP growth is highly uncertain.

E.   How Can Turkey Achieve a Higher Potential Output? And What Could Cause it to Slow Down?

14.   Increasing female labor force participation could significantly increase potential output for several years. With a participation rate of 34 percent in 2014 (up from 25 percent in 2005), Turkey has by far the lowest female labor force participation rate among all OECD countries. If Turkey manages to increase the female labor force participation rate to the level of the second lowest OECD member (Mexico at 47 percent) over a 10-year period, this could boost potential GDP growth by about 0.6 percent in each of the next 10 years, which increases the potential growth rate to above 4 percent in the medium term.

Female Labor Force Participation Rate for OECD Countries
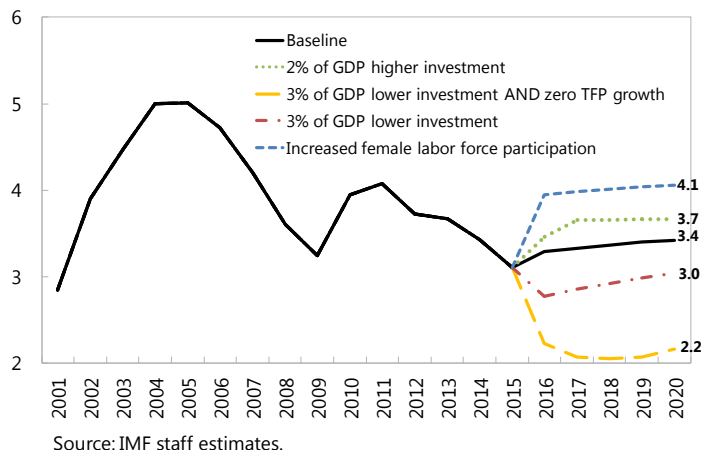(Percent)
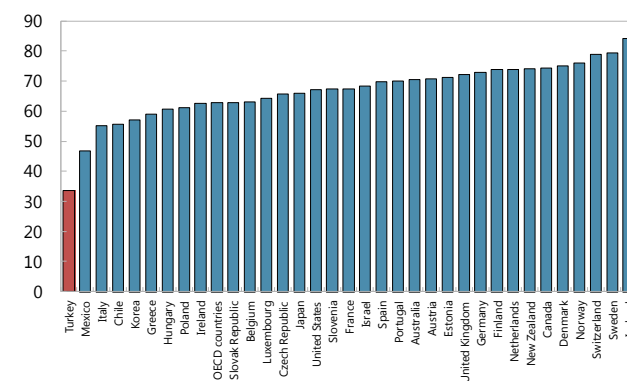
Source: OECD.

15.   Increasing investment could add to potential growth—however, this would require increased savings or a higher current account deficit. In spite of the large current account deficit, Turkey's investment rate is not high compared to other emerging markets economies. Staff expects a roughly constant investment rate from 2015 to 2020. If the investment rate were to increase by 2 percent of GDP compared to the baseline projections, this could boost annual potential growth by about 0.3 percentage points on average from 2016–20 assuming that about 60 percent of the increased investment will be in

Potential Output Growth Under Different Scenarios
(Percent)

Source: IMF staff estimates.

productive capital.[3] However, with the current account deficit projected to remain high in future years, any increase in investment is likely to require at least the same increase in domestic savings (see also SIP on increasing the private savings) as increasing borrowing from abroad would be challenging. Moreover, even if domestic saving increased it is more likely to lead to a reduction of the current account deficit than an increase in the domestic investment rate.

16.   Reduced access to external financing (due to Fed tapering and/or re-assessment of country specific risks), could lead to lower future potential output growth. A current account deficit of [2.9 percent] stabilizes Turkey's negative net foreign asset position according the Fund's external balance assessment (EBA). However, this is based on a medium term growth rate of 3.5 percent. As shown by IMF (2014), if the current account adjusts through restricted access to foreign funding (a higher external financing premium), lower investment would be the main source of adjustment. Lower investment leads to lower potential growth, which implies that a lower current account deficit can be sustained. The necessary reduction of the current account deficit to stabilize net foreign assets, if the adjustment happens solely through reduced investment, is about [three] percent of GDP. Such an adjustment would lead to an annual potential growth rate that is 0.5 percentage points lower on average from 2016–20.

17.   A return to positive total factor productivity is necessary to maintain potential growth rates above 3 percent. Since the beginning of the global financial crisis, TFP growth has contributed negatively to potential growth. If TFP growth from 2016–20 does not return to ½–1 percent growth as assumed, but instead stays at zero growth, and at the same time access to

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[3] Investment in productive capital was 60 percent of total investment on average from 2012-14 (and also around 60 percent in most years for the last 10 years).

financing disappoints, the potential growth rate could fall to just over 2 percent on average from 2016–20. With per capita income of around $10,000 Turkey still has potential to maintain growth rates well above those of advanced economies. Reforms to speed up this convergence process could help increase potential output growth. The 10th development plan lays out some broad goals for this such as increased spending on R&D, infrastructure, education, and innovation, etc. However, these policies are yet to be implemented and the extent to which it is possible to significantly boost total factor productivity growth remains uncertain and will likely take time.

F. Policy Implications

18.   **The slowdown in economic growth in recent years is partly a result of lower potential output growth.** Estimates of potential output growth show a slowdown since the mid-2000s and lower realized economic growth is thus driven mainly by a slowdown in potential growth rates. Output for 2014 is (in staff's view) close to its potential level and the persistent high inflation in an environment with declining commodity prices also indicates that the output has not fallen significantly below its potential. In addition, with the current account still elevated, higher growth rates will be unsustainable as they would lead to further build up of the external imbalance.

19.   **The structural slowdown can only be addressed through structural reforms to increase total factor productivity growth, national savings, and the female labor force participation rate.** Cyclical stimulus to boost output from fiscal and monetary policy should be avoided as this would lead to unsustainable growth. Higher domestic saving—through policies to increase private or public saving—is necessary to help avoid that a correction of the external imbalance happens through a drop in investment. With inflation well above target, monetary policy should focus on bringing inflation back to target. Expansionary fiscal and/or monetary policies should only be considered if the economy falls into outright recession, with output falling to a level significantly below potential. Addressing the recent slowdown therefore calls for policies to increase potential growth. While this is challenging, policies to boost female labor force participation, increase domestic saving to allow for a higher (or at least maintain the current) investment rate, and structural reforms that help faster convergence of total factor productivity provide opportunities to increase Turkey's growth potential.