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NEW PRIVATE PENSION AUTOMATIC ENROLLMENT: A MISSED OPPORTUNITY[1]

A. Introduction

1. The Turkish authorities have introduced a new automatic enrollment pension system also to promote private savings. The authorities' rationale behind the new automatic enrollment system is to raise the domestic savings rate and to encourage employees to save funds for their post-retirement life so that they can maintain the welfare level they enjoyed during their employment period.

2. This select issue paper provides policy advice to promote private savings and assesses the macroeconomic impact of the recently enacted provisions. The reform has many advantages with respect to the current voluntary private pension industry. It has also several design weaknesses that limit the ability of this reform to promote private savings. This select issue paper provides policy advice on industrial organization and the aforementioned design weaknesses to help authorities achieve their macro objective and it assesses the macroeconomic impact of the new provisions.

B. Industrial Organization Considerations

3. The new automatic enrollment pension system has many interesting features. Four main features relevant to the assessment in this section include:[2,3]

- **Salaried workers younger than 45 years of age are automatically enrolled in pension plans[4] chosen by their employers**. The system is voluntary in nature as individuals can opt out but experience shows that consumers are inert and tend to stay in the system, treating the voluntary contribution as an addition to their personal income tax. Exploiting such inertia is central to the Government strategy of raising private savings. The opt out rate is likely to be even lower than in the current voluntary system (8.3 percent of stock per year).

- **Collection of contributions, record keeping, asset management and custodianship remain the responsibility of existing voluntary pension firms and their service providers.** The current voluntary pension system is based on vertically integrated pension fund management companies (now 19) which are dedicated subsidiaries of financial services companies. These collect contributions and will use their sales force to attract employers into the system and retain

[1] Prepared by Gregorio Impavido.

[2] A larger set of features is summarized in in Annex I. This fuller set of information is used also in the next section.

[3] The assessment and policy advice of this section is based on chapter 3 of Impavido *et al*. (2010).

[4] We distinguish in this note between pension firms (the corporate entity) which operates a pension plan (the legal contract) by, *inter alia*, managing pension funds (the accumulated cash balances). For a more detailed private pension taxonomy, see Impavido (2013).

individual workers. The Pension Monitoring Center (PMC), governed by representatives of the companies and the Government, acts as the front-line information and monitoring hub of these companies, manages the registration and data on individual accounts and manages the 25 percent contribution subsidy provided by the Government to encourage pension saving. Takas bank, an offshoot of the stock exchange, provides centralized record keeping and custodianship of the assets—but with the account management duplicating that of the Pension Management Companies—reflecting the concern at establishment in 2003 to have an ultra-safe triple wall of protection for the assets of pension fund members.

- **The PMC will reconcile information ad contribution flows**. The contribution base is the same as the one for contributions to the Social Security Institution (SSI). The PMC will cross check contribution flows to the individual pension funds with the information extracted from the data transmitted to the SSI.

- **Pension firms can only charge a capped fee levied on assets under management**. The single fee facilitates performance comparison to help employers chose the firms/plans with the highest net rate of return. The cap is set to 0.85 percent of assets under management.

4. Many implementation details are yet to be defined. In particular, the Undersecretariat of Treasury needs to prepare bylaws on things such as: (i) the enrollment of an employee to a pension plan by way of their employer; (ii) the criteria to be taken into consideration by the employer when choosing the company and pension plan; (iii) the funds in which contributions will be invested; the contract to be entered into by the employer with the company; the right to withdrawal; (iv) enrollment of an employee to a pension plan by the employer in cases where the employee changes their workplace; transfer of accumulated savings in cases where the employee changes their workplace; (v) payment to the related pension plan upon the request of the employee whose employment relationship has been terminated; pausing contribution payments; (vi) abandonment of the system; and (vii) payment of Government contributions.

5. The new design has many advantages when compared with the existing voluntary pension industry.

- **The reform exploits consumers' inertia**. This is at the frontier of private pension system design and it is a central consideration for optimal industrial organization design of these quasi-markets.[5]

[5] Private pensions are referred to as "quasi-market". They are "markets" because services (although not necessarily all) are provided by competitive independent, often specialized—entities. They are also "quasi" because they differ from a conventional market on both the demand and supply side. On the demand side, consumption is typically mandatory generating a captive clientele. On the supply side, providers do not necessarily maximize profits and their governance structure includes both private and public sector firms, as well as for profit and mutual associations. A quasi-market may also emerge in the absence of formal compulsion if incentives for participation lead to the creation of a *de facto* captive clientele, as in the case of Turkey.

- **Employers act as a procurement board on behalf of workers**. Choice is exercised by employers. This reduces competition in the market for individuals that has proved to be wasteful in other countries. Typically, competition in the market encourages large marketing expenses that act as a barrier to entry, end up being paid for by consumers through higher fees, and do not result in consumer choosing pension firms with higher net rates of return (see further for a more detailed discussion on the heuristic behavior of pension consumers).

- **The automatic enrollment applies to the stock of salaried workers**. There is currently a lively debate of whether the stock design is superior to the flow design. With the stock design, the full segment of participants (the inert customers) is allowed to be served by providers procured by employers. In addition, target participants can spend their whole working career in the procured segment as they will be served by a sequence of providers selected through periodic procurement auctions. However, it requires periodic auctions for service providers to keep high the quality of services. With the flow design, only a fraction of inert participants is served by providers in the procured segment (typically, the flow of new entrants in the labor force) and periodic auctions are not necessary as the automatic allocation rule would contain clauses to encourage quality (Mexico, for instance). Generally, the stock design presents attractive characteristics, like targeting all inert participants and protecting them from dynamic predatory pricing schedules. More concretely, it maximizes the increase in private savings in the short term.

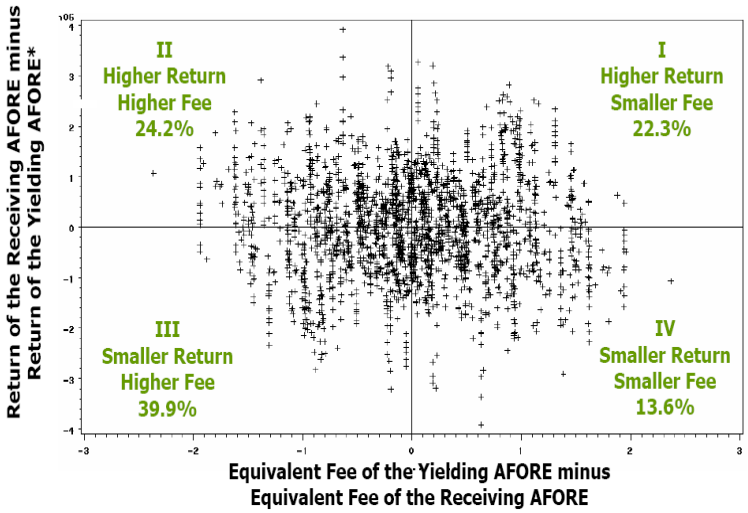
- **Only one type of fee can be charged and it is capped**. This is a huge improvement from the average 2.5 percent rates charged by private pension funds in the voluntary system. Everything else equal, this is likely to contribute an additional 20 percent cash balance at time of retirement for the average career worker.

6. It has also three key design weaknesses that have contributed to unraveling pension industries in other countries. These are: (i) the procurement component is incomplete; (ii) providers can charge a fee based on assets under management, and (iii) the fee rate is capped without a link to the structure of costs of pension service providers. Experience shows that these same industry design weaknesses contributed in other countries to: (i) wasteful competition in the market, (ii) extraordinary profits for, and rent extraction by, service providers, and (iii) regulatory capture when legislated fee caps need to be changed. Forced by strong social discontent stemming from consequences of these design weakness, many countries have indeed reverted the reforms that gave birth to these industries. We discuss the nature of these design weaknesses in the next three sections.

The Problem with Incomplete Procurement

7. Limiting choice by employers may not reduce marketing incentives. It is unclear that employers are abler than individual consumers to choose the best pension firm for their workers. They, like individuals, tend in practice to adopt simple rules of thumb to solve the needed intertemporal optimization problem and this leads to systematic biases. Calderón *et al.* (2008) analyze the choice of pension funds providers by Mexican contributors and the role played by the sales force of each fund in this selection process. Like many other studies, this paper finds that the

number of switches is highly correlated with the number of sales agents hired by the receiving pension fund manager and its marketing expenditure In their sample, nearly 40 percent of switches were made to pension funds with lower historical gross returns and higher fees (text picture).



8. Pension services should be auctioned.

9. Collection of contributions is not centralized but implemented by existing pension firms. According to interview with authorities, the existing pension firms will collect contributions and use their sales force to maintain individuals in the system. This has proved in other countries very detrimental. It is extremely costly to collect contributions. Sales force expenditures typically amount to 30 percent of total pension firms' expenditure. Because of these high costs and revenues being caped, pension firms will need to subsidize this service through another arm of the financial group and recuperate such costs by selling complementary services to participants. In other words, the current reform creates a captive source of revenues for existing pension firms or related financial groups. In addition, as it has happened in other countries, consumer protection is severely weakened as the presence of a sales force creates the opportunity for mis-selling of financial products.

10. The SSI is in principle best placed to collect contributions. Having the SSI collect contributions would maximize economies with minimal marginal costs. The SSI already collects SSI premia through the payroll system on the same contribution base and it enforces compliance with the labor code through its labor inspectors. Additional costs would be related to designing the software that diverts contributions and information to the pension funds chosen by the employer but these are expected to be minimal. Since collection of contributions is the pension services with the highest fixed costs, it is typically provided as a public good by the government through the local social security agency or the tax authorities. The choice between the two depends on relative efficiency and governance considerations.

11. The reform does not establish a public procurement board to auction all other pension services. Other pension services should be auctioned to avoid competition in the market. In

addition to collection of contributions, all other services in the pension industry (record keeping, administration, custodianship, and in part asset management) are characterized by high fixed costs. This means that centralization of services exploits economies of scale and reduces average costs for customers. While it makes sense that collection of contributions be run by the SSI as a public good, other services should be auctioned. However, the authorities plan to use current pension firms for administration and asset management; the PMC for record keeping and reconciliation of money and information flows, and Takas Bank for custodianship. Asset managed is planned to be auctioned but only to Turkish incorporated managers. it is unclear what rationale was followed to avoid a fully transparent public competitive procurement process (auctions) for most of these services that include qualified foreign providers from reputable jurisdictions. In other words, the current reform appears to create a captive source of additional revenues to the current banking and private pension fund industry disregarding efficiency considerations.

12. A public procurement board would promote competition for the market. The job of the procurement board is to assign participants to pension firms using an exogenous, public, and transparent rule; usually a contest based on prices, yields or other variables that are related to performance efficiency. The essence of procurement is that consumers are not given the opportunity to choose the board, otherwise a quasi-market is created and consumer inertia regains significance. Examples of countries that have adopted this framework are Singapore, Bolivia, and the United States for the Thrift Savings Plan. The merits of pure procurement arise directly from its primary objective, which is to deal in a radical manner with consumer inertia. When one demand block is granted to each of the firms winning the contest, the incentive of providers to spend in marketing to attract clients is removed. By establishing competition for the market, rather than in the market, consumer protection is ensured as rent extraction activities (mis-selling, cream skimming, et cetera) are eliminated.

The Problem with Fee Rates Based on Asset Management

13. Uniform fee rates are considered more transparent and equitable but can generate super natural profits. Uniform fee rates allow participants to quickly compare firms in terms of prices. However, they reduce efficiency in the supply. This, in turn, is a highly valuable policy objective as it helps align prices paid by consumers (administrative fees) to the structure of costs of pension firms. In other words, it contributes to reducing super natural profits, typical of these quasi markets. Uniform fee rates are also thought to be more equitable as they do not allow pension firms to price discriminate. But this happens only in proportional terms: the proportional fee rate is the same for all customers. Higher net worth customers pay more in absolute terms for the same services than low net worth customers. This inefficiency worsens over time as the fee base grows in a convex manner while pension service costs are essentially fixed. Over time, pension firms can earn extraordinary profits as pension consumers are inert (have low elasticity to prices) unless fees are

capped and continually lowered. These amount to a redistribution from consumers to pension firms.[6]

14. Uniform fee rates applied heterogeneous bases promote wasteful competition in the market. When uniform rates are applied to heterogeneous bases, different participants represent a different rent for pension firms. It is therefore economically attractive for the pension firm to invest in marketing whenever the marginal rent is larger than the marginal search/contact investment needed to attract that customer. Uniform rates applied to heterogeneous bases encourage firms to excessively invest in marketing and provide an explanation for the occurrence of marketing wars. Marketing expenses typically add up to 30 percent of fees charged to participants. These charges would add value if performance across firms were highly heterogeneous and individuals could choose the pension firms with the highest net rate of return. However, since individuals are inert and unable to choose (see next), uniform fees applied to heterogeneous bases only promote wasteful competition in the market.

The Problem with Caps on Fees Not Linked to Supply Costs

15. Capping fee rates as in Turkey reduces supply inefficiencies. From an economic perspective, the standard justification for price regulation as adopted in Turkey is that it limits the price distortions generated by low demand elasticity. Low demand elasticity renders the clientele of pension firms captive: i.e., unable to "vote with its feet" and to leave costly pension firms for more affordable pension firms. With price regulation, the ability of firms to charge above average costs is largely bounded by the credible threat of political interference (through the introduction of price caps) when mark-ups become intolerably high.

16. But caps need to be adjusted frequently increasing the likelihood of regulatory capture. Caps are not linked to the cost structure of pension firms and can easily become obsolete when the fee base grows allowing firms to charge well above average costs. In the absence of a formal process to set caps that reflect the actual production costs of firms, pension firms rely on lobbying and related practices to influence policy making. In this case, regulatory capture by well-connected market players becomes likely. At the same time, pension firms are exposed to excessive regulatory risk if a populist administration decides to arbitrarily lower the caps.

Other Potential Design Weaknesses

17. Interviews with authorities suggest other potential design weaknesses. These are considered "potential" as they had not been regulated at the time of writing.

- **Auctions for asset management would be limited to Turkish incorporated entities**. Current pension funds charge fees on asset management around 250bps. This suggests that they are not

[6] This is the key rationale for the strong popular discontent with the pension industry in Chile in these days. In Chile, 6 pension fuds manage assets amounting to 73 percent of 2015 GDP and charge fee rates around 75bpsThis yields, gross revenues in the neighborhood of 50bps of GDP that have generated popular discontent as deemed excessive.

efficient enough to be able to bid for a 70–100bps capped fee or that lack of competition exposes consumers in the voluntary system to predatory pricing. Allowing participation to auctions of qualified foreign asset managers from reputable jurisdictions without a footprint in Turkey (i.e., that would be unable to undercut the bid and subsidize it with ancillary activities) would generate competition to existing asset managers to reduce costs.

- **The investment rules in the new system would be decided by the Deputy Prime Minister in charge of the Undersecretariat of the Treasury**. This would be done on the basis of advice of an investment advisory committee. At the time of writing, it is unclear whether the yet to be designed provisions will apply to either the investment options that procured or to the investment rules that asset managers need to follow to provide the authorized investment options, or both. Irrespectively, it is unclear why a political appointee should be in charge of approving either of these. This could leave the option open for undue political influence on the asset allocation of pension funds for direct lending and or equity investment or simply to facilitate issuance of domestic debt (the responsibility of the Treasury). The presence of the envisaged advisory committee does not change the assessment as its governance is still undefined and its opinions are not likely to be published, as customary in most policy decision making in Turkey. Finally, the fact that the insurance and pension supervisor is hosted within the Treasury does not justify that a technical matter such as the one discussed in the paragraph be left to the decision of a political appointee.

- **The investment rules will include government debt**. If the objective is to pre-fund pension liabilities, investing assets in government debt does not achieve that objective. Many countries have used private pension funds as source of cheap financing of budget deficits and in this way reduced fiscal discipline. Investment limits in government debt should be kept at a minimum to avoid generating such temptation/perception.

How to Strengthen the Pension I/O Weaknesses in Turkey

18. A hybrid I/O would eliminate most of the aforementioned weaknesses. A hybrid industrial organizational model separates demand in two segments: procurement and quasi-market:

- In the procurement segment, the pension fund service providers are selected by a public board through periodic auctions. This applies to collection of contributions, administration and record keeping, and asset management. In this way competition for the market replaces wasteful competition in the market.

- In the quasi-market segment, participants choose their own provider.[7]

[7] Choice does not need to be over providers, it could be over investment options provided by asset managers procured by the public board.

In the most interesting types of hybrids, each participant is free to choose segment; i.e., there exists competition between organizational forms. Hybrids typically allocate undecided participants to the procured segment. Countries that have adopted hybrid industrial organization models include Mexico, Bulgaria, Chile, New Zealand (Kiwisaver), and Sweden (PPM). At the time of writing, the Turkish authorities had essentially chosen a hybrid system but with the important design weaknesses discussed in the previous section.

19. A hybrid I/O has many advantages relative to its extreme organizational forms. Firstly, it creates a performance benchmark for the board and benchmarks for the board's suppliers via outside options. In addition, by replacing the choices of the undecided with a technically qualified public board that compares prices while controlling asset management quality, the welfare of the undecided increases. Furthermore, if the allocation to the procured segment is reasonably targeted to inert participants, the share of active participants in the quasi-market segment increases. This raises the demand elasticity faced by firms in the quasi-market segment, which could result in lower prices and less marketing expenditures in that market. Finally, the public notoriety, or "signaling effect", of establishing a procured segment may further increase public awareness about price differences among participants further raising price elasticity. For example, in Mexico, the allocation of the undecided led the press to intensify information on prices every time a new group of participants was allocated.

20. The design of a well-functioning hybrid model needs to take into account several policy considerations among which the following five appear critical, especially for Turkey:

- **First, procurement needs to be supported by a strong governance framework**. The government should allocate participants to the procured segment only when it is arguably in their best interest and protect them from marketing and wasteful competition. Given the volatility of returns on pensions in a defined contribution system, a government may face suits from individuals that find *ex post* that the government allocation materially reduced her pensions, even though this could not be predicted *ex ante*. Thus, the allocation to the procured segment needs to be transparent and well-reasoned. This requires a procurement board that assigns periodic licenses to service providers through auctions under a strong governance framework. While it makes sense for collection of contributions to be conducted by the SSI as a public good, administration and record keeping but more critically, custodianship and asset management need to be auctioned periodically. At the time of writing, the Turkish authorities had not established a procurement board but chose to discharge its responsibility by forcing employers to choose on behalf of workers.

- **Second, the targeting of participants should be made with objective rules**. Involving the government in the business of finding the most convenient segment for an individual participant may lead to excessive interference, micro-management and legal liabilities. Possible objective rules include the simple requirement that the participant be undecided, in the sense that he or she does not to choose a pension fund administrator. Alternatively (or in addition), rules could be based on observable attributes of undecided participants (such as individuals with low assets) to be within a range that ensures that it is highly unlikely that they can do materially worse in

the default segment, if they choose to remain there. At the time of writing, the Turkish authorities had not chosen the rules that employers need to follow to choose pension firms.

- **Third, participants that recently chose a pension firm should be exempted from the default allocation**. Individuals should be free to leave the procured segment if they consider it worse than the choices available in the quasi-market. Also, to be efficient, a hybrid model must limit duplication of search costs and switching costs, and consequently, it would be desirable to exclude from the procured segment individuals that chose a provider. At the time of writing, the Turkish authorities had not chosen how individuals can elect alternative pension providers/services. Discussion with authorities suggest that this will be done by means of choosing alternative investment options within the procured segment, as it is the case for the US Thrifts Savings Plan. This appears a very reasonable and cost effective choice.

- **Fourth, heterogeneity in fee bases can destabilize the hybrid model**. Heterogeneous fee bases can set the maximum welfare for participants at one of the extreme organizational forms (pure procurement or quasi-market) and the hybrid model would not be viable. If the average base in the undecided segment is much lower than in the quasi-market segment, providers in the procured segment would need a higher fee rate to collect the same fee income per period as providers to the other segment. If the ratio between the average fee base (assets under management) of participants in the procured segment and the average base of participants in the quasi-market segment is low enough, providers do not participate in auctions in the absence of a large fiscal subsidy. I.e., the procured segment is eliminated.[8] By contrast, when flat fees are dominant as in New Zealand, there is no inequality in fee bases: the base is one unit of service per person per period. In other words, encouraging flat fees reduces the risk of an artificial elimination of the hybrid model and should be an additional aspect to consider when selecting fee bases. At the time of writing, the Turkish authorities had chosen to allow providers to charge a fee based on asset management which Staff would discourage.

- **Finally, there is the issue of whether a stock model is preferable to a flow model for Turkey**. As previously mentioned, the stock design that allocates all undecided individuals to the procured segment has the advantage of targeting all inert participants and protecting them from predatory pricing schedules and it maximizes the increase in private savings in the short run. However, it requires periodic auctions to ensure that incumbents maintain a high quality of service or be replaced by new entrants by the procurement board. At the time of writing, the Turkish authorities had chosen the stock model but still needed to design and introduce periodic auctions for services like asset management, custodianship, administration and record keeping.

[8] The difference in fee bases between the two segments can be substantial as undecided participants have also low contribution density. When Mexico switched in 2008 to asset-based only revenues, the inequality between the two segments increased dramatically. The average balance per participant in the allocated segment was US$30 compared to ten times that in the quasi-market.

C. Macroeconomic Impact of the Reform

21. We assess the impact of the auto enrollment reform for various scenarios. We want to answer the following question: "How effective is the new automatic enrollment system in reducing external imbalances"? In order to do so, we need to estimate the potentially covered population, their wage mass, make serval assumptions to project cash balances, and hence aggregate savings, going forward. We do so for different scenarios reflecting likelihood of outcomes and desired policies. We finally assess the impact of the reform on various macroeconomic aggregates using the G20 core module of the Flexible System of Global Models (FSGM) developed by the research department of the IMF.

Estimating the Covered Population and Wages

22. We use the labor force survey of 2015 to estimate gross individual earnings to estimate the initial conditions of our projections. The 2015 labor force survey contains salaried individuals for the private and public sector. A total of 14.1 million salaried workers reported a total of TL26 billion monthly net earnings for an average monthly net earnings of TL1,838 (Table 01, 2015 Net).

23. We gross up net wages also to take account of the 30 percent minimum wage increase of 2016. A total of 14.1 million salaried workers[9] reported a total of TL37.5 billion monthly gross earnings for an average monthly gross earnings of TL2,757 (Table 01, 2016 Gross). We derive the distribution with the following 3 steps:

- **We move from 2015 net earnings to 2015 gross earnings** by observing that:

$$\begin{cases} WG = WN + SSC + OT \\ SSC = \begin{cases} s\min\left(\overline{SSI}, WG\right) & \forall\ \underline{SSI} \le WG \\ 0 & \forall\ WG < \underline{SSI} \end{cases} \\ OT = xWG \end{cases}$$

where $WG > 0$ is gross wage,[10] $WN > 0$ is the net wage reported in the labor force survey, s = 0.15 is the sum of the SSI and UIF contribution rates, $SSC > 0$ is the sum of the SSI and UIF contributions, $\underline{SSI} = \text{TL}1,273.5$ is the 2015 minimum SSI contribution wage,

[9] We did not increase the labor force by the 1.9 percent assumed growth rate. Hence, our calculations underestimate the growth in the wage mass, albeit this omission contributes very little.

[10] We use "wage" and "earnings" interchangeably for this work.

$\overline{SSI} = \text{TL}8,227.75$ the maximum 2015 SSI contribution wage (calculated as 6.5 times the minimum wage),[11] $OT > 0$ is the rest of personal income tax (net of the minimum living allowance) and other contributions (stamp duty, etc.), and $x = 0.093$ is the proportional factor of OT in WG (basically, the effective average PIT rate on gross wages).

- **We estimate the effective average PIT rate on gross wages in two ways and take the maximum of the two estimates**. In Turkey, the SSI premium is 14 percent of gross wages and the UIF premium is 1 percent of gross wages. Wages net of SSI and UIF premiums are used as base for the PIT. PIT averages 17 percent of such base or 14 percent of gross wages. A minimum living allowance of about 45 percent of the PIT is deducted from the PIT. This allowance amounts to 8 percent of the PIT base or 7 percent of gross wages. A small stamp tax of 0.0795 percent is also levied on gross wages. Hence, the effective PIT rate is estimated as $x = 0.14 + 0.000795 - .07 \cong 0.08$. However, these calculations underestimate the effective PIT rate as they are based on SSI population where earnings are notoriously underreported. An alternative way to estimate effective PIT is to use macro data. In 2014, 17 million individuals were categorized as wage employed with annual average gross earnings of TL27,083. PIT revenues amounted to TL73,899 million, of which 60 percent are from wage income. This implies that PIT revenues from wage income was 9.3 percent of gross wages. Hence $x = 0.093$.

  Hence, gross earnings are given by:

$$WG = WN\left(1 - s - x\right)^{-1}$$

- **We increase the whole 2015 gross earnings distribution by 8.3 percent to simulate the 2016 gross earnings distribution before the 30 percent minimum wage increase**. The annual growth rate the average nominal gross wage increase we use in our projections, equal to average headline inflation of 6.3 percent and a productivity growth of 1.9 percent.

- **We simulate the impact of the 30 percent minimum wage increase that occurred in 2016**. In the 2015 labor force survey there are 5.8 million individuals with estimated 2015 gross earnings in the first bullet below the 2016 minimum wage. Of these, 3.8 million are between the 2015 and the 2016 minimum wages and 2 million are below the 2015 minimum wage. We simulate the impact of the 30 percent minimum wage increase that occurred in 2016 on the whole wage distribution by bringing the 2016 estimated gross earnings of individuals between the 2015 and 2016 minimum wages to the 2016 minimum wage.[12]

[11] In November 2016, this was brought to 7.5 the minimum wage. The increase in the contribution base would approximately add an additional 10bps in GDP to the increase in aggregate savings calculated in this note.

[12] This assumes no impact on quantities and excludes any impact on wages above the 2016 minimum wage. Although these impacts work in opposite directions, it is expected that our simplification underestimates the overall impact on the wage mass.

Table 1. Turkey: Labor Force Survey Scenarios

Age Cohort	2015 Net			2016 Gross			Scenario 01			Scenario 02			Scenario 03		
	Workers (Million)	Monthly Earnings (TL Million)	Monthly Average Earnings (TL)	Workers (Million)	Monthly Earnings (TL Million)	Monthly Average Earnings (TL)	Workers (Million)	Monthly Earnings (TL Million)	Monthly Average Earnings (TL)	Workers (Million)	Monthly Earnings (TL Million)	Monthly Average Earnings (TL)	Workers (Million)	Monthly Earnings (TL Million)	Monthly Average Earnings (TL)
15-20	0.60	566.71	947.33	0.60	848.14	1,417.76	0.32	577.75	1,816.55	0.32	577.75	1,816.55	0.60	848.14	1,417.76
20-25	1.83	2,472.86	1,350.38	1.83	3,632.66	1,983.73	1.46	3,170.92	2,174.94	1.46	3,170.92	2,174.94	1.83	3,632.66	1,983.73
25-30	2.61	4,587.86	1,759.28	2.61	6,645.06	2,548.14	2.33	6,275.03	2,693.87	2.33	6,275.03	2,693.87	2.61	6,645.06	2,548.14
30-35	2.71	5,212.06	1,924.51	2.71	7,523.38	2,777.94	2.45	7,160.06	2,919.37	2.45	7,160.06	2,919.37	2.71	7,523.38	2,777.94
35-40	2.26	4,541.41	2,010.31	2.26	6,541.47	2,895.67	2.02	6,164.66	3,044.55	2.02	6,164.66	3,044.55	2.26	6,541.47	2,895.67
40-45	1.85	3,745.10	2,022.49	1.85	5,395.36	2,913.69	1.64	5,051.16	3,079.21	1.64	5,051.16	3,079.21	1.85	5,395.36	2,913.69
45-50	1.25	2,581.03	2,066.45	1.25	3,703.56	2,965.19	-	-	-	1.10	3,395.10	3,096.24	1.25	3,703.56	2,965.19
50-55	0.65	1,386.20	2,122.32	0.65	1,993.84	3,052.65	-	-	-	0.57	1,862.29	3,254.82	0.65	1,993.84	3,052.65
55-60	0.25	564.97	2,219.01	0.25	811.42	3,186.98	-	-	-	0.22	754.88	3,452.49	0.25	811.42	3,186.98
60-65	0.08	225.84	2,677.92	0.08	319.38	3,787.01	-	-	-	0.07	279.24	3,840.16	0.08	319.38	3,787.01
65-70	0.02	48.89	3,169.90	0.02	65.45	4,243.50	-	-	-	0.01	35.15	3,495.63	0.02	65.45	4,243.50
70-75	0.00	8.41	2,371.10	0.00	11.81	3,329.43	-	-	-	0.00	8.58	3,230.15	0.00	11.81	3,329.43
75-80	0.00	10.66	8,585.27	0.00	13.53	10,893.70	-	-	-	0.00	4.62	7,930.23	0.00	13.53	10,893.70
80-85	0.00	2.12	6,928.09	0.00	2.86	9,326.46	-	-	-	0.00	2.17	10,705.50	0.00	2.86	9,326.46
85-90	0.00	0.67	2,616.92	0.00	0.96	3,743.89	-	-	-	0.00	0.91	4,291.94	0.00	0.96	3,743.89
90-95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95-100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100-105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105-110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
110-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15-	14.12	25,954.81	1,838.40	14.12	37,508.88	2,656.78	10.22	28,399.58	2,777.96	12.20	34,742.52	2,848.46	14.12	37,508.88	2,656.78

Source: IMF staff calculation.

Scenario Design

24. **We design 3 main scenarios**: The first scenario attempts to replicate the newly enacted provisions in terms of covered population and wages. The second scenario relaxes the age participation constraint but maintains the restriction on covered wages. In this way, an additional 2 million salaried individuals are captured in the new system. The third scenario relaxes also the covered wage constraint. In this way, individuals are allowed to contribute on full remuneration. By eliminating the constraint on minim wage, 2 million additional workers are allowed to participate. This population is important as it mimics the presence of individuals with low density of contribution.

25. **Scenario 1**. The number of participants is restricted by age and minimum gross salary: $a \leq 45$ and $WG > \underline{SSI}$. The contribution base is capped at maximum SSI contribution wage: $\overline{SSI} = \text{TL}10,705.5$. Hence the individual contribution base is given by:

$$WG_1 = \begin{cases} \left(WN + s\overline{SSI}\right)\left(1-x\right)^{-1} & \forall\ \overline{SSI} \leq WG \\ WN\left(1-s-x\right)^{-1} & \forall\ \underline{SSI} \leq WG < \overline{SSI} \end{cases}$$

Table 1 reports the initial condition for our projections with a total number of 10.2 million workers with estimated monthly gross earnings of TL28.4billion and average monthly earning of TL2,778.[13]

26. **Scenario 2**. The number of participants is restricted only by the minimum SSI salary: $WG > \underline{SSI}$. The contribution base is capped as in case 1. Hence the individual contribution base is given by:

$$WG_2 = \begin{cases} \left(WN + s\overline{SSI}\right)\left(1-x\right)^{-1} & \forall\ \overline{SSI} \leq WG \\ WN\left(1-s-x\right)^{-1} & \forall\ \underline{SSI} \leq WG < \overline{SSI} \end{cases}$$

Table 1 reports the initial condition for our projections with a total number of 12.2 million workers (2 million additional workers, older than the age of 45) with estimated monthly gross earnings of TL34.7 billion and average monthly earning of TL2,848.

27. **Scenario 3**. Neither age nor contribution base is restricted. Hence, the number of workers increases by another 2 million which reported gross earnings below the 2016 minimum wage.

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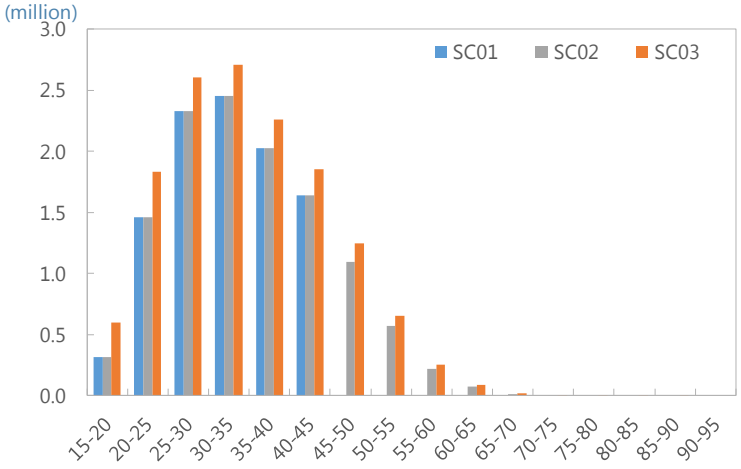
[13] The authorities count 14 million individuals under scenario 1 with an average wage between TL2,300 for public workers and TL2,500 for private workers. The difference between our estimated covered participants could be explained by the fact that we excluded around 2 million individuals with earnings below the minimum wage and that we excluded individuals with zero reported net earnings. This could also explain why the authorities have also a lower average wage.

$$WG_3 = WN\left(1-s-x\right)^{-1}$$

Table 1 reports the initial condition for our projections with a total number of 14.1 million workers with estimated monthly gross earnings of TL37.5 billion and average monthly earning of TL2,657.

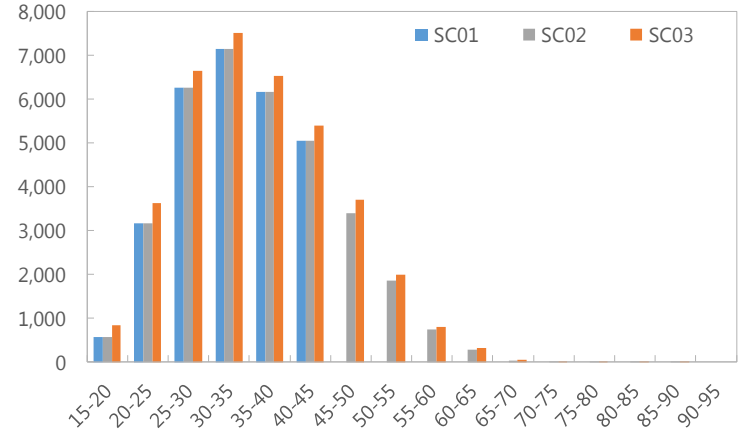
28. The age and wage distributions under the 3 scenarios are summarized in the following charts.

Turkey: Total Salaried Workers by Age, 2015

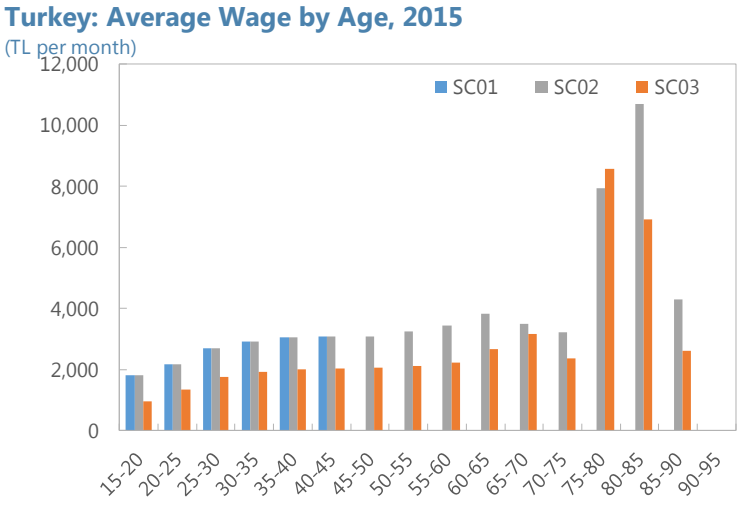


Source: IMF Staff Calculations.

Turkey: Total Wage by Age, 2015



Source: IMF Staff Calculations.



Source: IMF Staff Calculations.

Assumptions and Aggregate Savings Projections

29. We project these 3 scenarios using the following assumptions. The first set of assumptions in Table 2 relates to the reform. They characterize the three main scenarios in terms of covered population and wages. In addition, we assume a gross rate of return on accumulated balances of 9.3 percent, the average return in the last 5 years of the current voluntary pension system. We also assume that full coverage is achieved only in 5 years.

Table 2. Turkey: Projection Assumptions

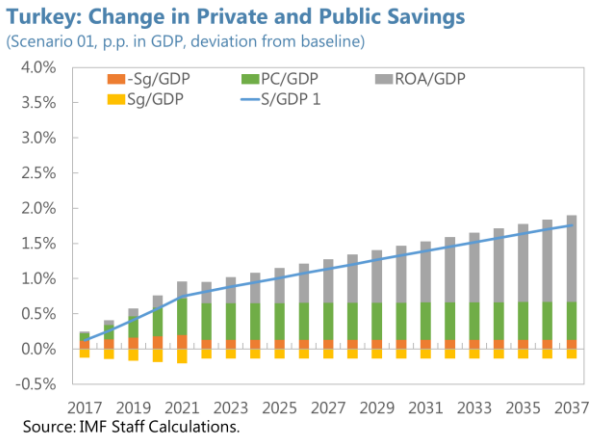
Assumptions		Scenario 01	Scenario 02	Scenario 03	Scenario 04	Scenario 05
Workers	(Million)	10.22	12.20	14.12	12.20	14.12
Monthly Earnings	(TL Million)	28,399.58	34,742.52	37,508.88	34,742.52	37,508.88
Monthly Average Earnings	(TL)	2,777.96	2,848.46	2,656.78	2,848.46	2,656.78
Pr. Sect. Contrib. Rate 1/	(Percent)	3.00	3.00	3.00	6.00	3.00
Pub. Sect. Subsidy 2/	(Percent)	25.00	25.00	25.00	-	-
Pub. Sect. Contrib. Rate 3/	(TL)	1,000.00	1,000.00	1,000.00	-	-
Gross Rate of Return	(Percent)	9.27	9.27	9.27	9.27	9.27
Years to full Coverage	(Unit)	5.00	5.00	5.00	5.00	5.00
In the baseline						
Labor Force Growth Rate	(Percent)	1.90	1.90	1.90	1.90	1.90
Nominal Wage Growth Rate	(Percent)	8.27	8.27	8.27	8.27	8.27
Nominal GDP Growth Rate	(Percent)	10.07	10.07	10.07	10.07	10.07
GDP Deflator Growth Rate	(Percent)	6.34	6.34	6.34	6.34	6.34
Productivity Growth Rate	(Percent)	1.93	1.93	1.93	1.93	1.93

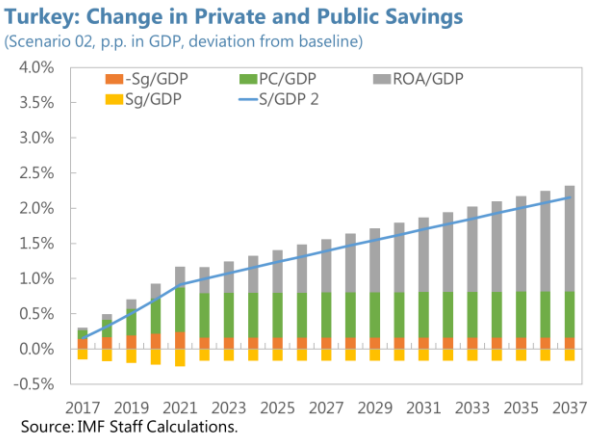
Source: IMF staff calculations.
Notes: 1/ As a percentage of gross monthly earnings; 2/ As a percentage of private sector contributions; 3/ One off transfer after 2 months of participation.

The second set of assumptions in Table 2 relates to the baseline. We assume a labor force growth of 1.9 percent consistent to the historical average. Wage growth is given by the sum of our inflation forecast of 6.3 percent and historical productivity growth of 1.9 percent. The nominal GDP growth is the result of the growth of 3.5 percent for real GDP and 6.3 percent for the GDP deflator.

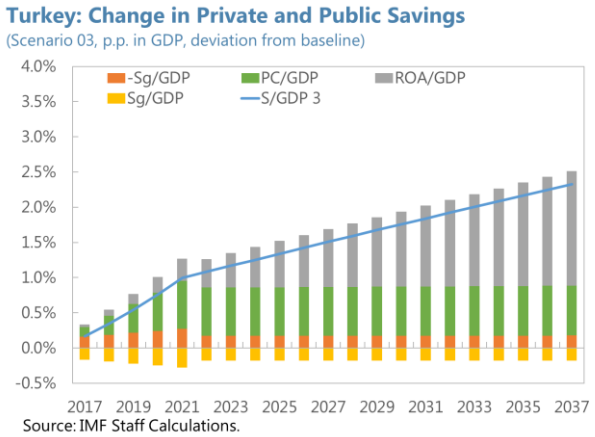
30. We also add 2 more scenarios. Scenario 4 is based on scenario 2 with a 6 percent private sector contribution rate and no government subsidy/contribution. Scenario 5 is based on scenario 3 with no government subsidy/contribution. They are motivated by the concern on the generosity of the government subsidy. With these scenarios we want to see what happens to aggregate savings if the subsidy is absent but we compensate for this by increasing the covered population and/or their contribution rate.

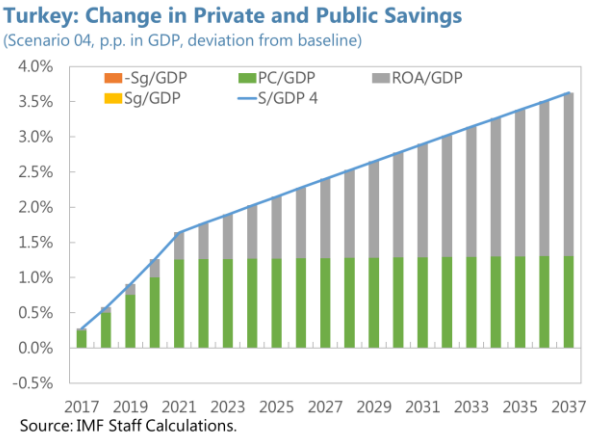
31. We project aggregate savings for the next 20 years. The next charts decompose the growth in aggregate savings as a percentage of GDP under all 5 scenarios. The increase in aggregate savings is due to four components. Firstly, the government dissaves due to the lumps sum and the Government contribution rate on the flow of private sector contributions.[14] Such dissaving is going to be highest in the first years of the implementation s many people are covered by the system per year. When full coverage is achieved, the lump sum contribution is reduced to the new net entries into the labor force per year. Secondly, government dissaving is a transfer into private sector accounts and therefore amounts private sector savings. Thirdly, private sector contributions will grow over time as a function of the growth in the covered labor force and the contribution wage. Fourthly, accumulated assets will yield a return which is automatically re-invested as, by assumptions, cash balances are completely illiquid.

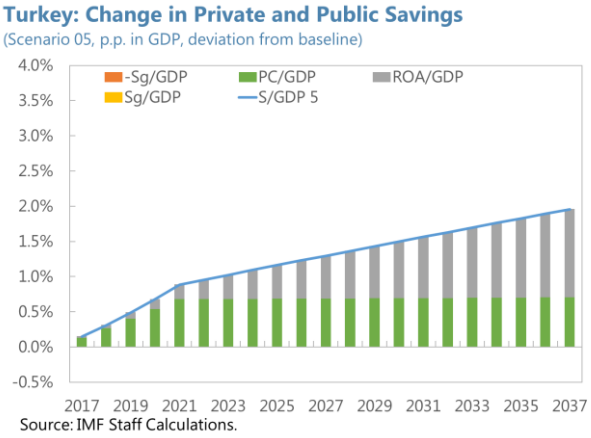




[14] We assume that due to inertia, individuals do not opt out. Authorities assume a positive opt out rate that lowers, other things equal, their estimates on aggregate savings.



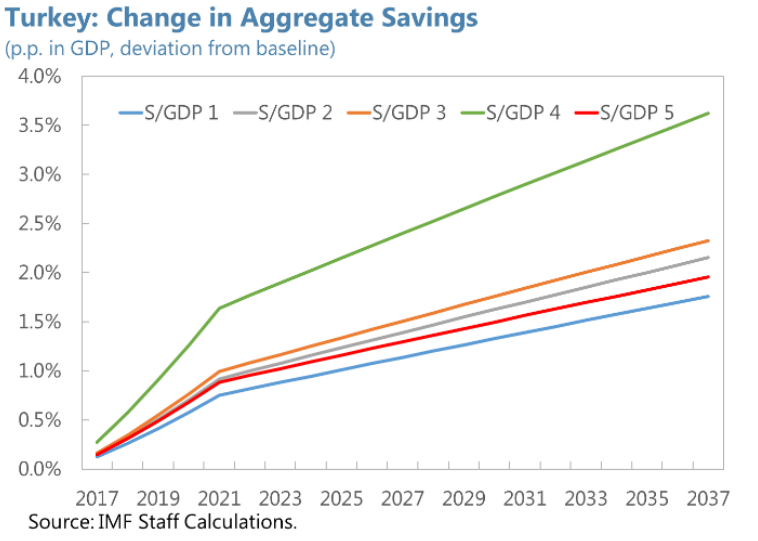




32. Aggregate savings increase the least under scenario 1 and the most under scenario 4. Under scenario 1 aggregate savings would increase by 1 percent of GDP in only 10 years when coverage is complete (blue line). The low growth rate is due to the fact that the least number of people with the lowest total monthly earnings are covered in the system. In scenario 2 the cap of 45 years of age is released and all workers are allowed to participate. Aggregate savings would increase by 1 percent of GDP already after 7 years (grey line). Finally, in scenario 3, all salaried workers are allowed to participate with no wage restriction. Under this scenario, aggregate savings would increase by 1 percent of GDP already after 6 years (orange line).[15]

[15] We projected aggregate savings under scenario 1 using the authorities' assumptions for covered workforce reported in footnote 13, a gross rate of return of 7 percent and an opt out rate of 8 percent (also authorities' assumptions). With these assumptions aggregate savings grow more quickly than our scenario 1 in the short term as more people are covered over time and the government transfer plays a larger role. Over the long time, aggregate savings grow less than in our scenario 1 as the gross rate of return is lower and (more critically) the covered population shrinks: the opt out rate is much higher than the growth rate of the labor force.

33. Scenarios 4 and 5 are alternatives that attempt to mitigate the impact of higher number of individuals on government dissaving. While a faster increase in aggregate savings is desirable to help rebalance the economy, this comes at the expenses of increasing debt. Scenario 4 replicates scenario 2 but it eliminates government subsidies and it doubles the private sector contribution rate to 6 percent to compensate. The higher contribution rate more than compensates for the absence of the government transfer, Since the contribution base and rate are both larger than in scenario 1, the return on asset component (the grey area in the previous charts) grows very rapidly and over time aggregate savings accumulate more quickly than in all other scenarios. Under scenario 5, we relax both the age and salary constraints as in scenario 3 but we eliminate the government subsidy. Aggregate savings would grow by less than in scenario 2. The problem with scenario 3 is that a large number of individuals are covered but they have a low average wage as now we are adding also about 2 million workers with reported earnings below the minimum wage. Hence, since the large government subsidy is missing and individuals have a very low contribution potential, aggregate savings accumulate very slowly.



Model Simulations

34. We simulate the impact of the auto enrolment reform using the G20 core module of the FSGM. The FSGM is a semi-structural model combining both micro-founded and reduced-form formulations of various economic sectors (See Annex II). We simulate the path of aggregate savings **Consumption deteriorates**.[16] This yields directly from the accounting identity that GDP is either consumed or saved. in the previous subsections as annual shocks in the model.[17] The key results of

[16] All statements should be interpreted as "deviation from the baseline".

[17] This, *inter alia*, has the effect of reducing the impact of rational expectations on nominal variables that, as a consequence, adjust much more gradually.

the model when aggregate savings increase are and can be followed graphically in Annex III where scenarios 1 and 4 are simulated:

- **Investment increases**. The cost of capital (the global interest rate), as perceived by Turkish firms, increases because the REER depreciates. Notice that global rate *per se* does not increase as Turkey's contribution to global savings is too small to affect the cost of capital in FX. This should depress investment. However, the real interest rate decreases and this increases investment. Finally, a financial accelerator effect amplifies the short term response of investment to stronger activity. Overall, the last two effect dominate the increase cost of capital and real investment increases.

- **The REER depreciates**. With inflation constant, the REER depreciates because of nominal depreciation. The exchange rate depreciates as a consequence of the level of net exports to achieve the current account balance required to support the desired net foreign asset position that reflects households' desired wealth holdings.

- **Employed labor remains constant**. With more capital there is higher demand for labor but both the income and wealth effect tend to decrease the supply of labor. In net terms, employed labor does not change while wage inflation decreases in the short run driven by the negative output gap through a Philips curve for nominal wages.

- **Potential output increases**. Because investment is higher while TFP and labor remain constant.

- **A small negative output gap opens in the short run but quickly closes**. In the short run real GDP decreases because of the fall in consumption while potential output remains constant. However, in the long run, real investment increases potential output and GDP increase because investment and net exports more than offset the fall in consumption.

- **The monetary authority accommodates to keep inflation constant**. The decrease in consumption contributes to lowering GDP in the short run. This opens a small negative output gap and the monetary authority reacts by decreasing the policy rate to keep headline inflation constant. This decreases the real interest rate in the economy. In the long run, GDP increases due to the higher contribution of investment and net exports. The policy rate remains below the baseline over 20 years as the monetary authority continues to be hit by new surprises year after year but it returns to baseline in the longer run (not shown).

- **The private sector saves as per projections**. In this model we do not have fully Ricardian agents. Two elements contribute to breaking down Ricardian equivalence. Firstly, the model uses finitely lived, rather than infinitely-lived, OLG households. This means that there is a chance that any tax liabilities associated with the government subsidy (see next) will fall due beyond their expected lifetimes. Secondly, the model contains liquidity constrained (LIQ) household. These do not have access to financial markets, do not save, and thus consume all their income each period. Adding LIQ households amplifies the non-Ricardian properties of the basic OLG

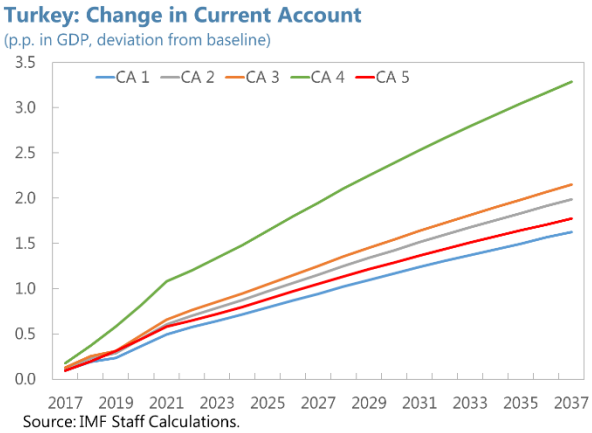
household framework and it is one way to simulate liquidity constraints for households who also save.

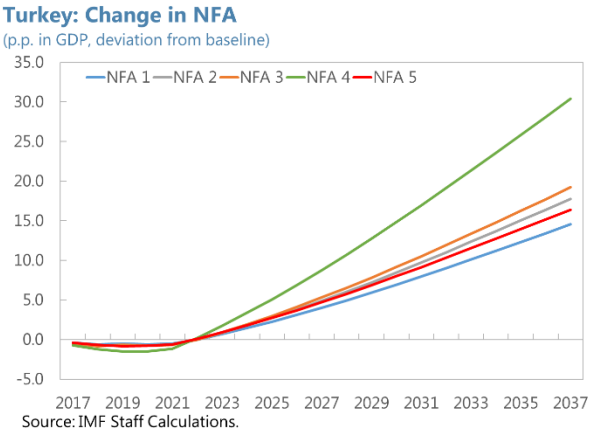
- **The government dissaves more than projected and debt to GDP worsens.** This is due to the presence of automatic stabilizers. When GDP growth decreases by 1 pp, the budget deficits by 25 bps.[18] The ratio of debt to GDP worsens relative to the baseline as by assumption, that the deficit is debt financed. The presence of automatic stabilizers is obvious in scenario 4 where no government dissaving is assumed. Budget and debt dynamics are of course contingent on the financing choice. Should the government decide to raise taxes or use privatization proceeds, these would be different.

- **Higher aggregate savings reduce both flow and stock measures of external imbalances**. The real depreciation makes Turkey more competitive and the current account improves. Imports decrease as they are positively correlated with domestic activity and are an increasing function of the appreciation if the REER. Exports increase with foreign activity, and are also an increasing function of the depreciation. With the economy rebalancing, the current account, and consequently, the NIIP improve.

35. The new automatic enrollment voluntary pension system contributes only weakly to rebalancing the economy. The following two charts report the deviations of the current account and NFA from the baseline under our 5 scenarios. With scenario 1, the improvement of the current account deficit as a share of GDP amounts to only 1 p.p. in 2027–28. With scenario 2, the CAD improves by the same amount in 2025–26. Scenarios 3 and 4 are better with the CAD improving by 1 p.p. in 2024–25 and 2020–21, respectively. The improvement in NFAs follows similar pattern and ranking under the 5 scenarios studied. In the short run, NFA/GDP worsens slightly because the current account improves at a rate lower than GDP growth. However, in the long run, the rate at which the current account improves accelerates and NFA/GDP improves. A faster implementation schedule would help reach the 1 p.p. target earlier under all scenarios but the improvement would be small (1–2 years). Clearly, a slightly larger base and a higher contribution rate is needed to rebalance the economy.

[18] This assumption is standard for all EMs in the FSGM.





D. Conclusions and Policy Recommendations

Industrial organization

36. The newly enacted automatic enrollment provisions has several advantages relative to the current voluntary private pension system. They exploit consumer inertia to maximize participation, fees are capped, they attempt to reduce wasteful competition in the market.

37. But they have several weaknesses that risk endangering the reform in the long run. The hybrid I/O is not complete without the establishment of a public procurement board and periodic auctioning of pension services. Employers are unlikely to be more skilled than individuals in choosing pension plans for their workers. Fees are charged on heterogeneous bases (asset under management) thus prompting competition in the market and wasteful marketing expenses. They would become obsolete over time and it will be necessary to lower them periodically exposing the authorities to the risk of regulatory capture. The SSI is not used to collect pension contributions while pension firms' sales forces are used to retain individuals in the system generating he incentives and opportunities for misspelling. A political appointee is in charge of investment rules and/or investment options. The governance of the investment advisory committee is yet to be defined and its opinion are not likely to be publicized as customary of the style of Turkish policy making. Foreign asset managers are not likely to be allowed to participate in the auctions.

38. Hence, Staff advises to:

- **Complete the hybrid I/O model along the lines recommended by the World Bank by establishing a procurement board for pension services for undecided participants**. The most important objective of the reform is to avoid competition in the market. The central benefit of the procurement board is that it removes the responsibility from employers for choosing pension providers and it establishes a centralized mechanism to select them via periodical auctions. Repeated auctions would contribute to maintaining prices close to average costs even with uniform fees applied to heterogeneous bases. In particular:

- The Pension Monitoring Center (PMC) appears to be the ideal candidate to act as a public procurement board. The private sector/public sector representation in the would ensure sufficient check and balances during, and transparency about, the public procurement activity.

- Collection of contributions should be given to the SSI. No private sector service provider would be able to provide the same service at lower costs. In addition, this would represent a duplication of service. It is more efficient for the Government to provide collection of contributions as a public good.

- Initially, allow Takas Bank to provide custodian services and/or record keeping and administration. This service, especially custodianship, would need to be auctioned periodically so as to ensure maintenance of quality of service over time.

- Asset management should be allocated through competitive auctions where foreign asset managers could participate. Ideally, new entrants would provide a limited set of investment options following passive asset management styles. Asset management and custodianship could be bundled in the same auction. The presence of qualified foreign asset managers could be beneficial for specific mandates for which local expertise is missing or weak. In addition, they would generate competition among domestic asset managers to reduce the currently very high fees.

- **For the quasi market, wasteful competition within the market would be eliminated with flat fees**. A flat fee kills incentive for marketing and protects participant in the procured segment from predatory pricing by providers in the quasi market. It also protects participants in the quasi market from wasteful competition from pension firms. More critically, it facilitates the existence of the procurement segment where fee rates would be much higher than in the quasi-market segment to cover production costs.

- **Finally, replace the current proportional subsidy with a means tested flat subsidy**. Flat fee would be high for low income participants or participants with low contribution density in general. Hence a flat subsidy that is means tested and comparable to the current proportional one in terms of fiscal cost, would enable low wage individuals to participate in the hybrid I/O pension system.

Macroeconomic Impact

39. The new automatic enrollment system has many positive macroeconomic implications. The increase in aggregate savings would increase GDP and potential output. As real investment would increase with the lower cost of funding and higher savings, potential output would be boosted. At the same time higher real investment and stronger net exports would compensate for the fall in consumption induced by higher aggregate savings. This would raise GDP growth keeping the output gap closed in the long run.

40. However, the impact on external imbalances of the new enrollment system would be felt only after 20 years. Under plausible scenarios, the CAD would improve by 1 p.p. only between 2024 and 2028 with the latter date being more than 10 years from today. An improvement of 2 p.p. would not be possible before 20 years from today. The increase in aggregate savings would be even smaller if the authorities' assumptions discussed in footnotes 13 and 15.

41. Hence, Staff advises to increase the private sector contribution rate and the contribution base.

- A contribution rate of at least 6 percent is needed to improve the CAD by at least 1 p.p. in the next 5 years; sooner if the government subsidy is maintained.
- Individuals older than 45 years of age should also be allowed to participate and the cap on their contribution salary lifted. However, a change in the contribution base would require a legislative amendment which could be impractical. It would also reduce the ability to reconcile the flows of contributions and information. Hence, maintaining the current wage cap could be compensated by a further increase in the contribution rate.

Annex I. Key Aspects of the New Auto Enrollment System

Automatic participation. Salaried employees under 45 years of age and registered with the Social Security Institution (SGK) will be included in a pension plan through a pension contract arranged by the employer. The pension company that the employer may choose must be amongst the one approved by the Undersecretariat of Treasury.

Contributions. Participants' contribution amount will be 3 percent of their earning subject to Social Security Insurance (SSI) contributions. Such earnings have a lower limit of has its own upper and lower limits by law. The lower limit is the monthly gross minimum wage (TRY1,647 for 2016), and the upper limit at 6.5 times Gross Monthly Minimum Wage (TRY10,705.5). The Council of Ministers is authorized to double the contribution rate or lower it to 1 percent, or determine it to a fixed amount. The employee may request the employer to make a deduction in an amount greater than the amount specified in the pension contract for automatic enrollment.

Matching. The Government will provide state subsidy for employees amounting to 25 percent of employees' paid contributions to private pension account. In case the employee stays in the plan, the government provides another one-off subsidy of TRY1,000.00. Employer's matching contribution is not an option within the auto enrollment system.

Opting out. Participant employees may opt out from the system within 2 months of participation. In this case the accumulated amount of contributions and investment income, if any, will be refunded within 10 days.

Portability. Full portability is ensured by having individual accounts linked to the national ID number. In the event of workplace change, employee's accumulated savings and retirement time basis gained in the system will be transferred to pension contract of the new workplace, if the new workplace has a pension plan. In case the new workplace does not have a pension plan, employees may continue to pay contribution to the contract arranged in previous workplace upon request.

Retirement benefits. Upon retirement, the employee has the choice of receiving their savings in a one-lump sum or as a monthly annuity over the course of several years. If the employee chooses to receive their pension in annuities exceeding 10 years, the state will provide an extra 5 percent contribution of a private pension customer's total savings.

Fees. Pension companies cannot charge any fees on participants of auto-enrollment plans other than fund management fees. These will be capped.

Roll out. The plan is to start implementing the new system starting with large employers in January 2017.

Pending issues at the time of writing. Enrollment of an employee to a pension plan by way of their employer; the criteria to be taken into consideration by the employer when choosing the company and pension plan; the funds in which contributions will be invested; the contract to be entered into by the employer with the company; the right to withdrawal; enrollment of an employee to a pension plan by the employer in cases where the employee changes their workplace; transfer of accumulated savings in cases where the employee changes their workplace; payment to the related pension plan upon the request of the employee whose employment relationship has been terminated; pausing contribution payments; abandonment of the system; payment of Government contributions and other principles and procedures governing the enforcement of the new provisions are yet to be defined by the Undersecretariat of Treasury.

Annex II. The Flexible System of Global Models

The Flexible System of Global Models (FSGM) is a semi-structural model combining both micro-founded and reduced-form formulations of various economic sectors. Real GDP in the model is determined by the sum of its demand components in the short run, and the level of potential output in the long run. What follows is a brief overview[1] of the components of aggregate demand, potential output, the price block, commodities, and finally monetary and fiscal policy.

A. The Real Side

Aggregate demand follows the standard national expenditure accounts identity, where real GDP is the sum of household consumption, private business investment, government absorption and exports of goods and services, less imports of goods and services.

The consumption block is micro founded and uses the Blanchard-Weil-Yaari overlapping generations (OLG) model of households. Using OLG households that have a finite expected lifetime rather than infinitely-lived households results in important non-Ricardian properties whereby the path for government debt, and thus fiscal policy actions, have significant implications for private consumption dynamics. The model also contains liquidity constrained (LIQ) households that do not have access to financial markets, do not save, and thus consume all their income each period.

In the OLG framework, households treat government bonds as wealth since there is a chance that the associated tax liabilities will fall due beyond their expected lifetimes. The OLG formulation thus results in the endogenous determination of national savings given the level of government debt. Consequently, the world real interest rate is endogenous and adjusts to equilibrate the global supply of and demand for savings. The use of an OLG framework necessitates the tracking of all the stocks and flows associated with wealth, and thus the model has full stock-flow consistency.

Private business investment is also micro founded and uses an updated version of the Tobin's Q model, with quadratic real adjustment costs. Investment is negatively correlated with real interest rates. Investment cumulates to the private business capital stock, which is chosen by firms to maximize their profits. The capital-to-GDP ratio is inversely related to the cost of capital, which is a function of depreciation, the real interest rate, the corporate tax rate, and relative prices.

Government absorption consists of spending on consumption and investment goods. Government consumption spending only affects the level of aggregate demand. It is an exogenous choice determined by the fiscal authority. The level of government investment is also chosen exogenously, but in addition to affecting aggregate demand directly it also cumulates into a public capital stock,

[1] This is a summary of Andrle *et al.* (2015).

which can be thought of as public infrastructure (roads, buildings, etc.). A permanent increase in the public capital stock permanently raises the economy-wide level of productivity.

The real competitiveness index (RCI) is the long-run determinant of the level of net exports that adjust to achieve the current account balance required to support the desired net foreign asset position that reflects households' desired wealth holdings. Exports and imports, individually, are modeled using reduced-form equations. Exports increase with foreign activity, and are also an increasing function of the depreciation in the RCI. Imports increase with domestic activity, and are an increasing function of the appreciation of the real effective exchange rate (REER).

The current account and implied net-foreign-asset positions are directly linked to the saving decision of households. The model can be used to study both creditor and debtor nations as positive or negative net foreign asset positions can be a feature of the well-defined steady-state in the OLG framework.

Aggregate supply is captured by potential output, which is based on Cobb-Douglas production technology with trend total factor productivity, the steady-state labor force, the non-accelerating inflation rate of unemployment (NAIRU), and the actual capital stock.

The unemployment rate varies relative to the NAIRU according to an Okun's law relationship with the output gap.

B. Prices

The core price in all regions is the consumer price index excluding food and energy, CPIX, which is determined by an inflation Phillips curve. CPIX inflation is sticky and reflects the expected paths of import prices and the economic cycle, as captured by the output gap. In addition, although the direct effects of movements in food and energy prices are excluded, there is a possibility that persistent changes in oil prices can leak into core inflation. In addition, there is a Phillips curve for nominal wage growth. Wage inflation exhibits stickiness and allows the real wage to return to its equilibrium only gradually depending on the expected evolution of overall economic activity.

There is also a full set of prices that mimic the structure of demand: consumption; investment; government; exports; and imports. The GDP deflator itself is a weighted average of the consumption, investment, government, export, and import deflators.

The model also incorporates three types of commodities – oil, food and metals and their associated prices. This allows for a distinction between core and headline inflation, and provides richer analysis of the macroeconomic differences between commodity-exporting and -importing regions arising from commodity-based terms-of-trade shocks.

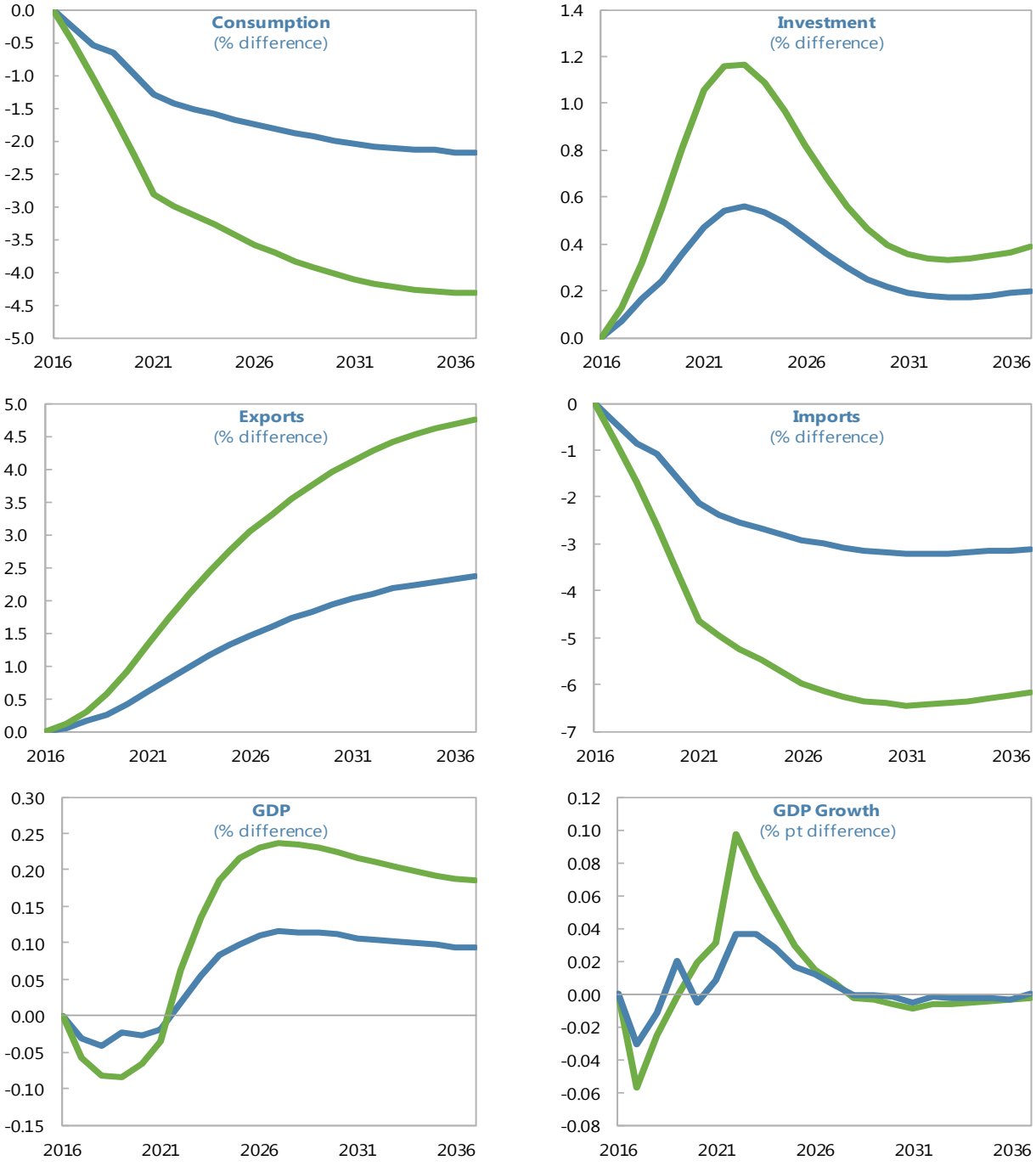
C. Policy

In the short run, the nominal side of the economy is linked to the real side through monetary policy. The behavior of monetary authorities is represented by an interest rate reaction function. The standard form is an inflation-forecast-based rule operating under a flexible exchange rate. However, due to the form of the interest rate reaction function, the model can accommodate a fixed exchange rate regime, monetary union, or a managed floating exchange rate regime.

Monetary policy can influence activity through both short-term and long-term interest rates. The long-term, 10-year, interest rate is based on the expectations theory of the term structure, plus a term premium. The interest rates on consumption, investment, government debt and net foreign assets are weighted averages of the 1-year and 10-year interest rates, reflecting their differing term structures, and allowing for a meaningful role for the term premium.

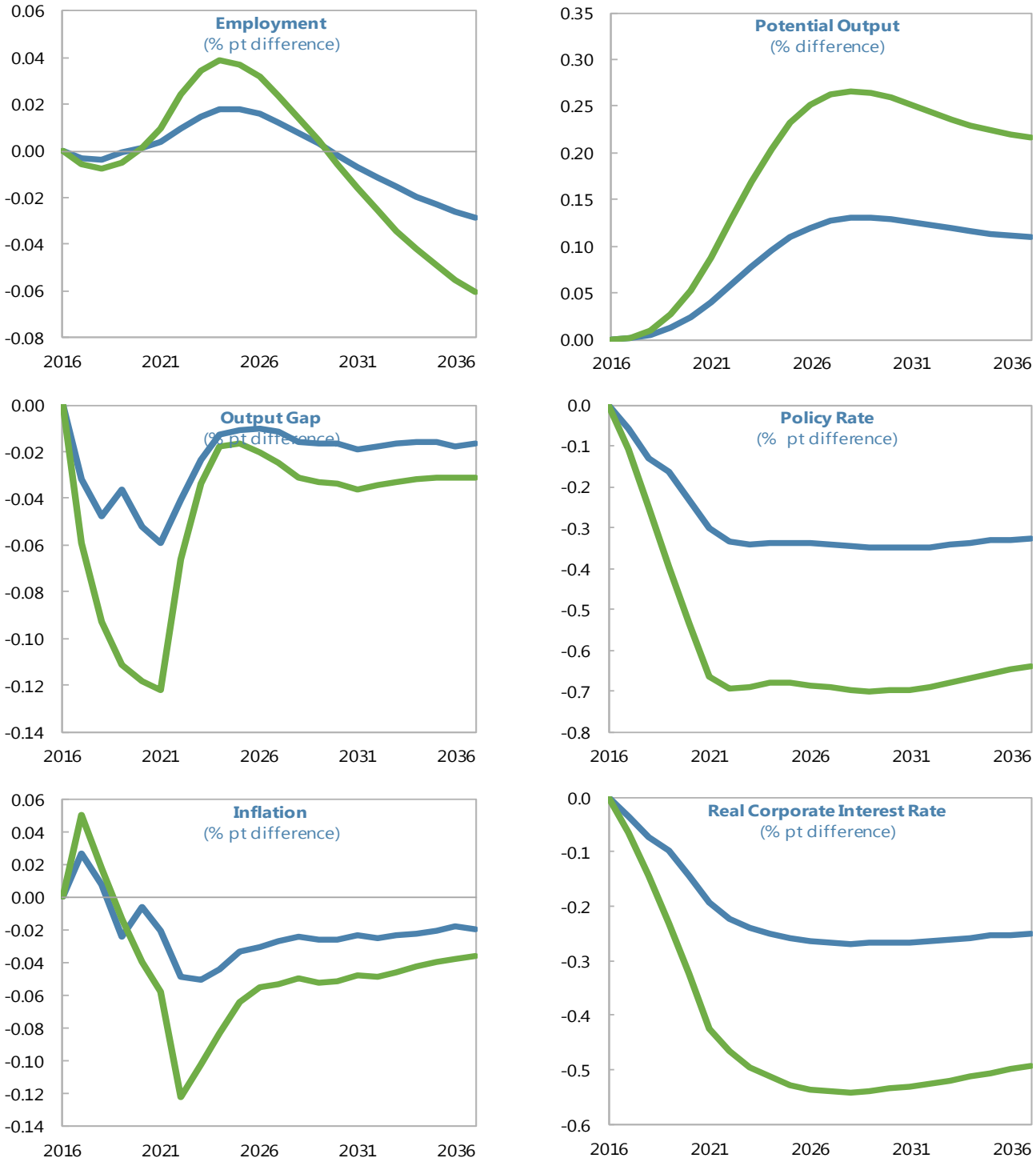
Annex III. Model Simulations of Scenarios 1 and 4

Model Simulations of Scenarios 1 (blue) and 4 (green)



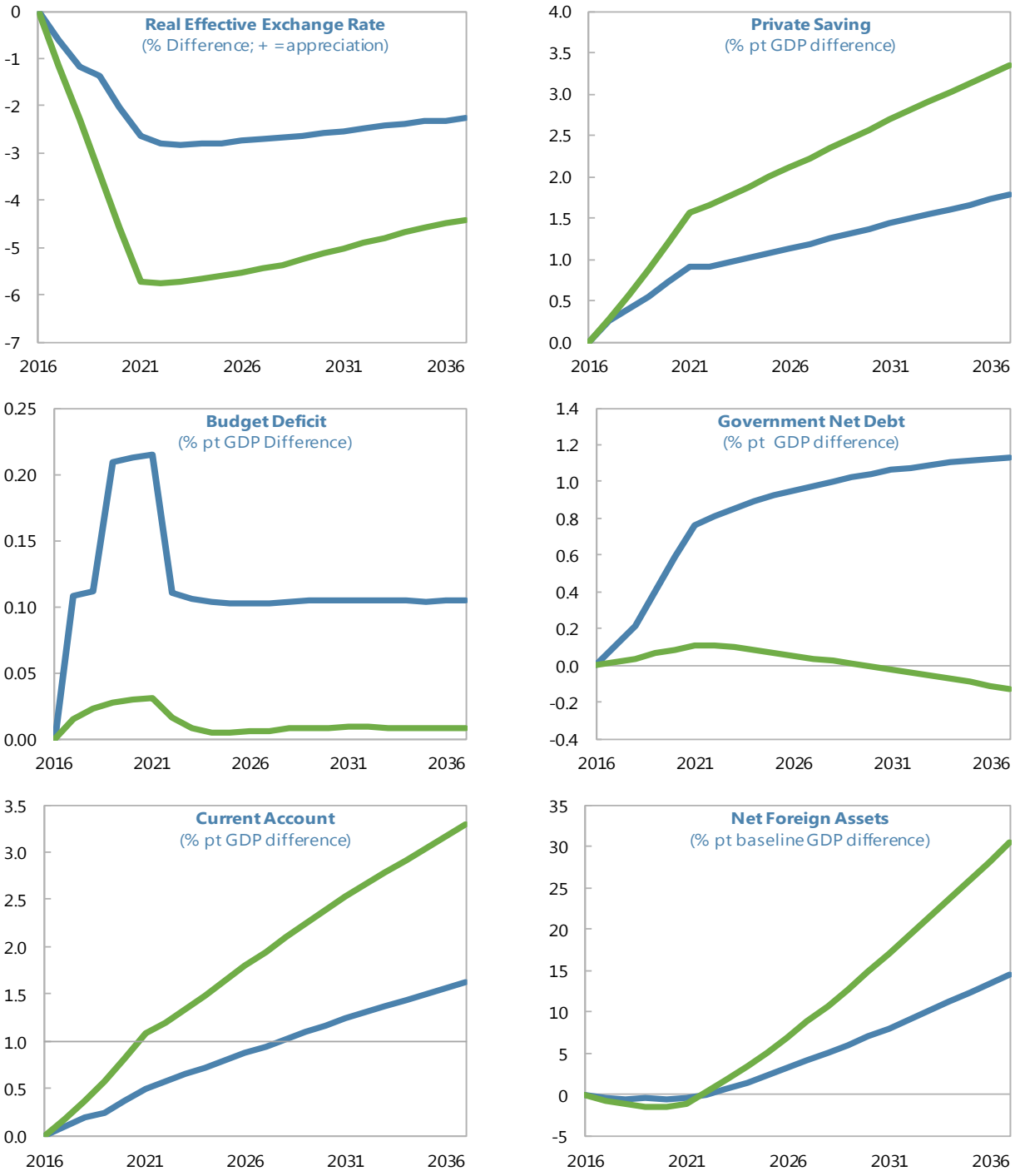
Source: Staff calculations using G20MOD.

Model Simulations of Scenarios 1 (blue) and 4 (green)



Source: Staff calculations using G20MOD.

Model Simulations of Scenarios 1 (blue) and 4 (green)



Source: Staff calculations using G20MOD.

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TURKEY'S TOURISM SECTOR: RECENT DEVELOPMENTS AND THE IMPACT ON BROADER ECONOMY[1]

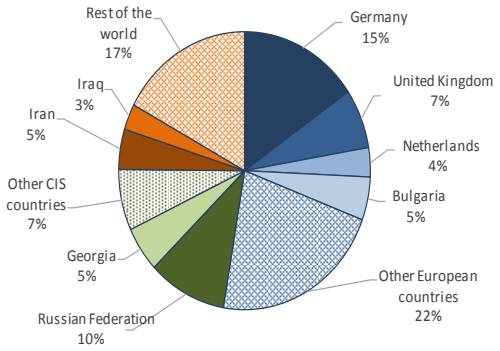
After a decade of a vibrant development Turkish tourism sector was hit by a major fall in foreign tourists' arrivals. This study takes stock of recent developments and considers potential spillovers from tourism sector to other parts of the economy. It finds that a negative shock to foreign arrivals had a significant impact on the economic activity in 2016, while the recovery prospects remain subdued.

A. Inbound Tourism in Turkey: an Overview

1. By 2015 Turkey became one of the most popular touristic destinations in the world. Turkey's share in the global inbound tourist flows increased from 1.5 percent in early 2000s to about 3 percent in 2015. Over that period the number of foreign tourists' arrivals tripled and reached 36 million people. This was mainly driven by visitors coming for travel and entertainment (up 146 percent since 2004); the increase in the number of business related visits and shopping tours was relatively modest (about 6–11 percent).

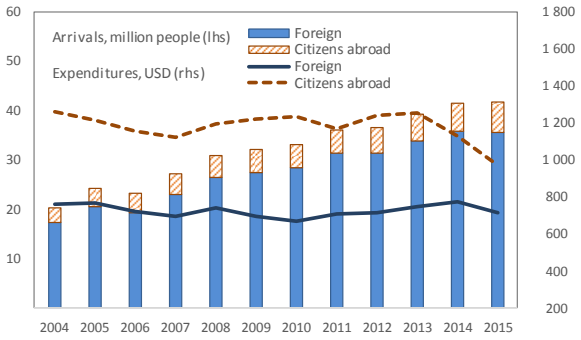
2. Large part of the increase in tourist arrivals over the last decade came from emerging market and developing countries. In 2015 the top three source countries by the number of tourists were Germany (5.6 million), Russia (3.6 million), and the UK (2.5 million). With a combined share of EU countries over 50 percent (Figure 1), advanced economies remain the most represented clientele. At the same time, over half of the increase in tourists' arrivals between 2004–2015 was due

Figure 1. Foreign Tourist Arrivals by Country Expenditures, 2015 (percent of total)



Source: TUIK

Figure 2. Tourist Arrivals and Average 2004–2015



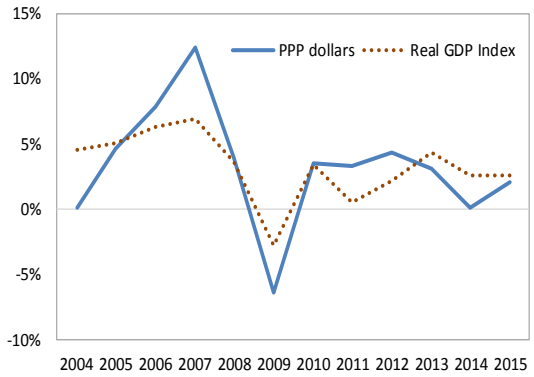
Source: TUIK

[1] Prepared by Zoltan Jakab and Natalia Novikova.

to EMDCs. As a result, the average level of expenditures by foreigners did not change much since 2004, and even decreased slightly in 2015 (Figure 2).

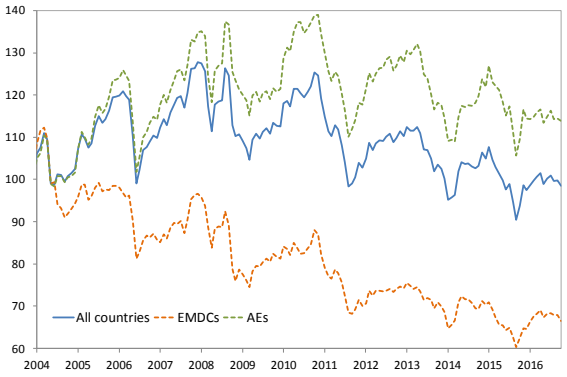
3. Neighbors' income growth and improved Turkey's competitiveness facilitated the pick-up in demand.[2] Income growth in the main source countries, especially in EM, was particularly strong before the GFC and slowed down noticeably in the recent years. (Figure 3). In the meantime, REER depreciated vis-a vis developing economies by over 30 percent since 2003. Surveys show that compared to other destinations, as of 2015 the average cost of a daily meal per tourist outside the hotel of residence was comparable to Egypt, and roughly 10–15 percent lower than in the main European and Asian touristic destinations.[3]

Figure 3. Income Growth in Source Countries *(Y-o-Y, percent)*



Sources: WEO, TUIK, staff estimates.

Figure 4. CPI-Based REER *(Index, 2003=100)*



Sources: CBRT.

4. Accessibility and accommodation capacity have improved substantially Airlift supply is often found to be an important determinant of foreign tourist arrivals.[4] Between 2003 and 2014 the number of airports in Turkey has increased to 52 from 26, while the national carrier, Turkish Airlines, has expanded the list of destinations to 280 countries. Maritime transport was also on the rise, but mainly due to freight. In addition to that, in 2007 the government launched a sector development program (Strategy 2023), which included investment incentives, measures to address transportation

[2] In theory, tourism can be considered as a 'luxury' good, with income elasticity of demand close to or above unity. This assumption if often confirmed in the empirical studies (see for example Tsounta (2008) and TRA (2011)). For Turkey the analysis of demand factors had mixed results, potentially because tourists considering Turkey as a low-cost destination may go to other countries as they become richer.

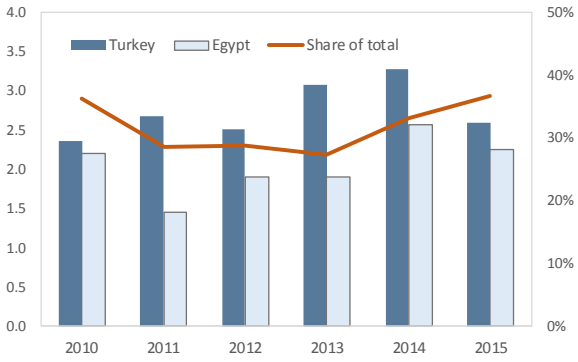
[3] Source: Central Bank of Russia. Based on the survey of over 300 largest Russian tourist companies. The sample of the average cost of a daily meal (including breakfast, lunch and dinner) included about 50 countries. For Turkey, the average cost of a daily in 2015 was estimated at US$50–55.

[4] See, for example, Acevedo (2016), TRA (2011).

and infrastructure bottlenecks, and marketing activities. In 8 years, country's capacity to acccommodate tourists increased 2.5 time, and the total bed capacity of accommodation facilities exceeded 1,250 thousand.

5. Removal of barriers for tourist arrivals, improved general perception of the country, and normalization of the security situation, have also contributed to sector growth. According to UNWTO, as of 2011 Turkey had the most open visa policies towards their current source markets among G20 with just 3 percent of foreign tourists requiring visas.[5] Anecdotal evidence suggests that visa free travels for Russian tourists introduced in 2011 and further relaxation of the visa regime in 2013 helped to divert some tourists from Egypt. The later provides similar type of vacation and is often considered as a close substitute for holiday travel (Figure 5). On the other hand, minimal number of terrorist attacks between early 2000s and 2013 (Figure 6), marketing activities, and positive developments in the EU accession process supported tourists' interest in the region.

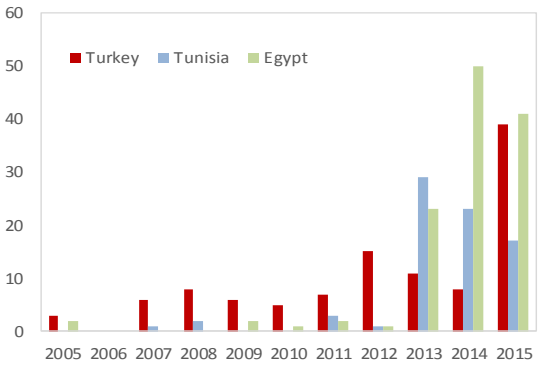
Figure 5. Russian Citizens Traveling Abroad



(non-business travel, millions)

Sources: Rostourism, staff estimates.

Figure 6. Number of Terrorist Attacks in Major Touristic Areas



Sources: GTD, staff estimates. Some of the key areas in Turkey included in the accounting: Istanbul, Ismir, Ankara, Antalya.

B. Security Uncertainty and Its Implications for the Turkish Tourism Sector

6. Foreign tourists' arrivals fell sharply in 2016 due to rising security concerns and travel restrictions. Consistent with the global trend and the regional dynamics, the number of incidents in Turkey increased dramatically in the last few years.[6] According to the Global Terrorism Database, the total number of registered attacks exceeded 400 in 2015 (as compared to an average of 70 in 2010–2014), including at least 40 episodes in the key touristic areas. In the course of 2016 the

[5] Sources: The World Tourism Organization (UNWTO) and the World Travel & Tourism Council (WTTC). Tourism Economics, 2012 'The Impact of Visa Facilitation on Job Creation in the G20 Economies', 4th T20 Ministers' Meeting, Mexico. Two other countries mentioned by the study as having very open visa policies were Mexico and Australia.

[6] In 2015, the Global Terrorism Index deteriorated by six per cent in 2015. Apart from Turkey, significant deterioration in GTI scores were registered in France, Saudi Arabia, Kuwait, Tunisia, and Burundi. See Institute for Economics and Peace (2016).

security level assigned to Ankara and Istanbul by the UN, was raised to moderate from minimal/low a few years ago. In addition to that, at the end of 2015, Russia have introduced restrictions on its economic relationships with Turkey, including sanctions on charter flights and sales of travel tours. In January-September 2016, the number of tourist arrivals from Europe dropped by over 30 percent and from Russia by more than two-thirds. This contributed to about 30 percent drop in exports of transportation services, and had negative spillovers to the food & accommodation sector.

7. Studies show that repeated incidence of violence tend to have long-lasting effects on tourist arrivals.[7] Analysis based on case studies show a big dispersion of the time (from a few weeks to a few years) required for the tourists' inflow to reach its pre-crises level. These case studies, as well as cross-country econometric analysis of the effects of violence on travelers' preferences have identified a number of factors that can shape tourists' reaction and its longitude. First, tourists' reaction can come with a lag. Second, frequency may be more important than severity, especially if combined with political uncertainty. At the same time, security concerns over the neighboring region may have positive as well as negative spillovers. Third, areas providing 'scandalized travel goods' tend to suffer more, as tourist demand appears to be more sensitive to negative news and tend to switch easily to other locations with similar characteristics.

8. Recovery prospects remain subdued in the near term. Given remaining political uncertainty and high share of 'sun-shine' travelers, recovery of the tourist arrivals to historical heights may take a few years. Anecdotal evidence suggests that EU tourists tend to book at least 4–6 months in advance, which means that the next year season may be affected by the recent attacks. The response to sanctions would probably be asymmetric: demand dries up quickly on the introduction of restrictions, but tend to recover only gradually after the sanctions are removed. While Russian restrictions on travels to Turkey were lifted in 3Q 2016, the tourist inflows may remain weak due to security uncertainty.

C. Shocks to Tourism and the Broader Economy

9. Tourism has become an important sector of the Turkish economy. In 2015, travel services earned around US$27bn of exports revenues (3.7 percent of GDP and about 13 percent of total export proceeds). In selected regions, it is one of the key employers. Overall, the tourism sector was estimated to directly generate over 600 000 jobs (2.3 percent of the total employment), with about two-thirds of jobs associated with foreign tourism. Additionally, approximately one million of jobs is created indirectly.[8]

[7] See among others the World Travel and Tourism Council (2015), Ahlfeld et al (2015) for the analysis of case studies, Neumayer (2006) for the effect of violence and political uncertainty more general in a cross-country panel.

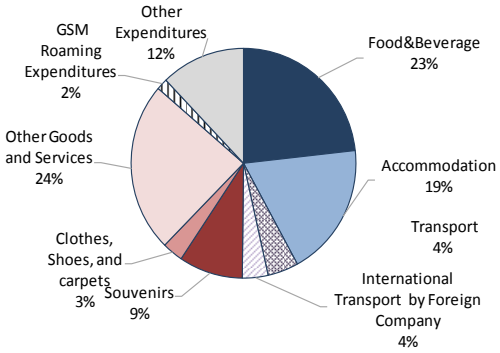
[8] Sources: CBRT (workers registered in the tourism industry); the World Travel and Tourism Council (coverage of the travel and tourism sector includes hotels, travel agencies, restaurants, airlines and other passenger transport, as well as the activities of the restaurant and leisure industries directly supported by tourists).

10. In this study the potential near-term economic effect of shocks to tourism is studied under a VAR framework. The choice of the methodology is driven by the lack of up to date detailed data on the structure if the economy, which have shifted significantly in the recent years. Large-scale CGE (Computable General Equilibrium) models are often presented in the literature as a superior approach for analyzing intersectoral linkages. These models are rich in structural details, but less focused on short-term dynamics and forecasting, and require significant data inputs for calibration. The exercise presented in this paper focuses on a 1–2 years impact of a shock to tourism on other sectors and GDP. Time series methods could be considered as a good alternative in this case.[9] However, standard VAR models normally require large number of observations to get powerful estimates. The approach used here relies on a Bayesian method. By shrinking the estimated parameter space, it allows to mitigate the issue of relatively short time series available for Turkey.

11. Four BVAR models were estimated using alternative indicators for the tourism sector (Annex I). The set of indicators used in the models include:

- *number of foreign tourist arrivals* or the *real exports of travel services* registered in the balance of payments statistics capturing the development of the tourism industry;
- *real gross value added (GVA) for three subsectors* of the economy: food & accommodation, transportation, and the rest of the economy. [10] The first two resent over 46 percent of total tourist expenditures, and are the first to experience the shock (Figure 8);

Figure 7. Tourist Expenses by Types of Expenditure, 2015



Source: TUIK

[9] Among others, Tase (2016) used time series approach to analyze the link between the sectoral composition and the business cycle for the United States. IMF (2011) use VAR models to explore the role of agriculture and its relation to other sectors in Paraguay. Canova and Dallari (2013) use panel Bayesian VAR models to study the role of tourism on the international transmission of business cycles.

[10] The real GVA series are taken from the data available prior to the release of 2016:Q3 GDP estimates, and therefore do not account for the methodological changes announce in December 2016.

- *Income level* in source countries measured as a PPP based GDP weighted by time-varying shares of countries in total tourist arrivals and *CPI-based real exchange rate index* were included as control variables capturing drivers of foreign demand.

- *A trend variable* was found to be highly significant and is used a proxy for capacities improvement.

12. Given linkages between tourism and other sectors, a 10 percent shock to foreign arrivals is estimated to have 0.2–0.3 percent impact on GDP (annualized).[11] This accounts for the fall in real GVA in food & accommodation and transportation of about 0.8–1.7 percent and 1.3–2.0 percent respectively. Based on median responses, the model predicted that absent of policy measure to offset the impact of the weak tourism sector and other positive shocks GDP would decelerate to around 2 percent in 2016.

13. Two recovery scenarios are considered to assess a potential impact of stronger tourism sector on growth in the future (Table A.3). Under a "quick recovery" scenario tourist arrivals (revenues) reach the pre-shock trend level already in 2017. However, as it was discussed in Section B, a more likely scenario would probably involve a gradual pick up in the sector. Under a "slow recovery" scenario tourist arrivals (revenues) remain below the trend till the end of 2018. The total GDP impact is calculated as a weighted sum of responses of the three sectors. A quick recovery would lead to an output growth of around 1 percent higher in 2017 and an additional 0.3 growth acceleration in 2018. This come with 5–8 percent higher value added in the most affected sectors. On the other hand, a more gradual recovery in tourism would only lead to 0.2–0.3 higher GDP growth in the first two years with negligible spillovers to other sectors of the economy.

14. While the results presented in this study are close to earlier estimates, they should be interpreted with a great caution. Absent of a structural model behind it, the VAR approach provides a rough aggregate estimate of the impact, and the confidence interval around the estimated are large due to relative short data series. In addition to that, historical estimates of the linkages capture the capacity building effect. Given significant spare capacity after the shock, recovery in demand will unlikely to stimulate additional capital spending. Finally, the assessment mentioned above does not take into account counter policy measures, including withdrawal of fiscal stimulus introduced to mitigate the fall in GDP during shock.

[11] CBRT (July 2016) estimated that in 2016 the total effect of a 30 percent drop in tourism revenues on growth was about -1.1 pp. Similar magnitudes of the impact on GDP per 10pp change in tourist arrivals were estimated based on the CGE models (Akkemik and Senerdem (2014) and Gul (2015)). It is worth noting, however, that the results of the CGE models cannot be directly compared as they can only be treated as relevant for the longer term.

Annex I. Model Settings, Estimation Results, Diagnostics and Illustrative Scenarios

Bayesian VAR estimates were performed in the BEAR toolbox[1] using the following settings (Table A.1.) The shock to tourism is assumed to have positive impact on the tourism sector, the real GVAs of transportation and food & accommodation in the first two quarters. No restrictions on the direction of the response were implied for the rest of the economy, however the impact of a shock to tourism is limited in the first four quarters between -0.001 and 0.001. The priors for the residuals were assumed to follow a Normal-Wishart distribution. This relatively flexible assumption is used in the absent of prior knowledge on the variance-covariance matrix of the VAR coefficients. The hyper-parameters were chosen by grid search to achieve the highest marginal posterior.

Illustrative simulations are based on the two models with the best forecast performance (Table A.3). The model with the highest Bayes-factor was the model based on current account data and with one lag. The other model, with tourist arrivals with 1 lag had higher Bayes-factor than the model with current account data for the more limited sample between 2003:1 and 2016:2. However, the forecast performance (measured by the Root Mean Squared Errors) of the models do not coincide with the in-sample fit. Value added in the food and accommodation and in the other sectors are better forecasted by the model estimated on tourist arrivals. For the transportation sector, the best forecast performance was generated by the model on the longer sample with 1 lags. This shows, that despite the slightly worse in sample fit, the we are inclined to also use the estimates for the shorter sample. Better forecast performance can be the result of the significant structural changes in the tourism industry.

Table A.1. Model Settings and Estimation Results

	Longer sample		Shorter sample	
	Tourism revenues		Tourism revenues	Tourist arrivals
	Model 1	Model 2	Model 3	Model 4
Estimation sample:	1998:1 2016:2	1998:1 2016:2	2003:1 2016:2	2003:1 2016:2
Sample size:	73	72	53	53
Number of lags:	1	2	1	1
Prior distribution:	Independent Normal-Wishart		Independent Normal-Wishart	
Hyperparameters:	optimized by grid search		optimized by grid search	
Autoregressive coefficient	0.9	0.9	0.7	0.9
Overall tightness	0.05	0.05	0.1	0.05
Lag decay	2	1	2	2
Exogenous variable tightness	100	100	100	100
Log10(Marginal likelihood)	225.38	221.11	170.62	175.46
Log10(Bayes factor) Compared to Model 1	...	-4.27	-54.76	-49.92

[1] See Dieppe and others (2013).

Table A.2. Forecast Evaluation: Root Mean Squared Errors (2015:Q1 – 2016:Q2)

	Longer sample		Shorter sample	
	Tourism revenues		Tourism revenues	Tourist arrivals
	Model 1	Model 2	Model 3	Model 4
Estimation sample:	1998:1 2016:2	1998:1 2016:2	2003:1 2016:2	2003:1 2016:2
Number of lags:	1	2	1	1
Tourist arrivals	...	...	...	0.072
Tourism revenues	0.079	0.079	0.083	...
Real value added in Transportation	0.015	0.015	0.017	0.017
Real value added in Food and Accomodation	0.043	0.044	0.037	0.035
Real value added in Other sectors	0.011	0.012	0.012	0.008

Table A.3. Illustrative Scenarios

Macroeconomic impacts of Selected Illustrative Recovery Scenarios for Tourism
(percentage difference from baseline)

BVAR model with Real Tourism Revenues and with 1 lag (sample 1998:1 2016:2)

	Tourist arrivals	GDP	Gross Value Added		
			Food and accomodation	Transportation	Other
Quick recovery					
2017	32.4	0.9	5.6	5.7	0.0
2018	32.4	1.2	6.7	6.5	0.2
Slow recovery					
2017	7.3	0.2	1.4	1.4	0.0
2018	11.8	0.4	2.3	2.3	0.0

BVAR model with Foreign Tourist Arrivals and with 1 lag (sample 2003:1 2016:2)

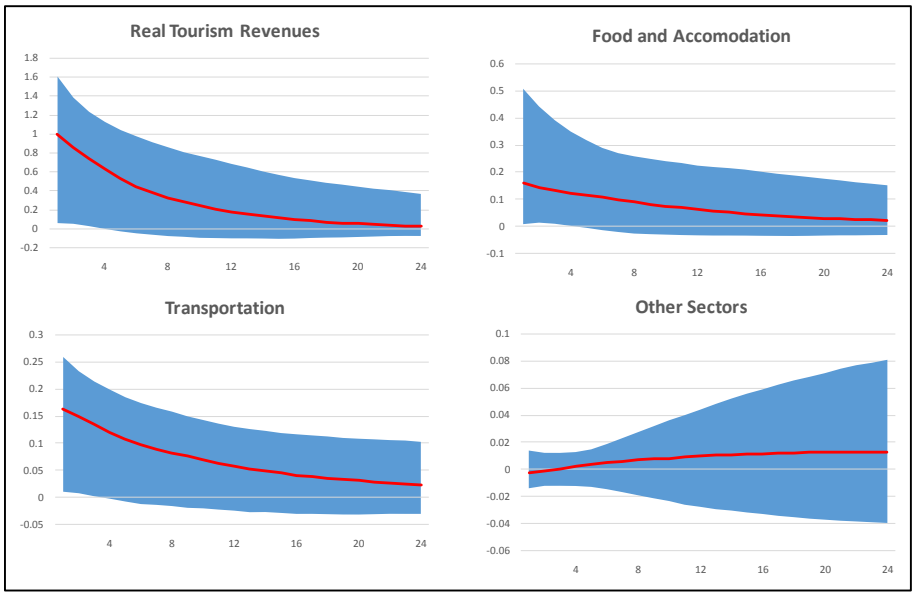
	Tourist arrivals	GDP	Gross Value Added		
			Food and accomodation	Transportation	Other
Quick recovery					
2017	32.4	1.1	6.5	7.5	0.0
2018	32.4	1.4	7.8	7.2	0.2
Slow recovery					
2017	7.3	0.3	1.6	1.9	0.0
2018	11.8	0.5	2.7	2.6	0.1

Impulse response to an exogenous shock are presented on Figure A.1. In the model based on longer real exports series, it was found that the median immediate spillovers from a 1 percentage increase in tourist arrivals or real tourism revenues are about 0.15 percent in the two most affected sectors, while the positive spillovers to the rest of the economy come later and to a smaller extent. For the models based on tourists' arrivals, however, the spillovers are estimated to be more intense and the median response reaches around 0.2 percent in the two most influenced sectors.

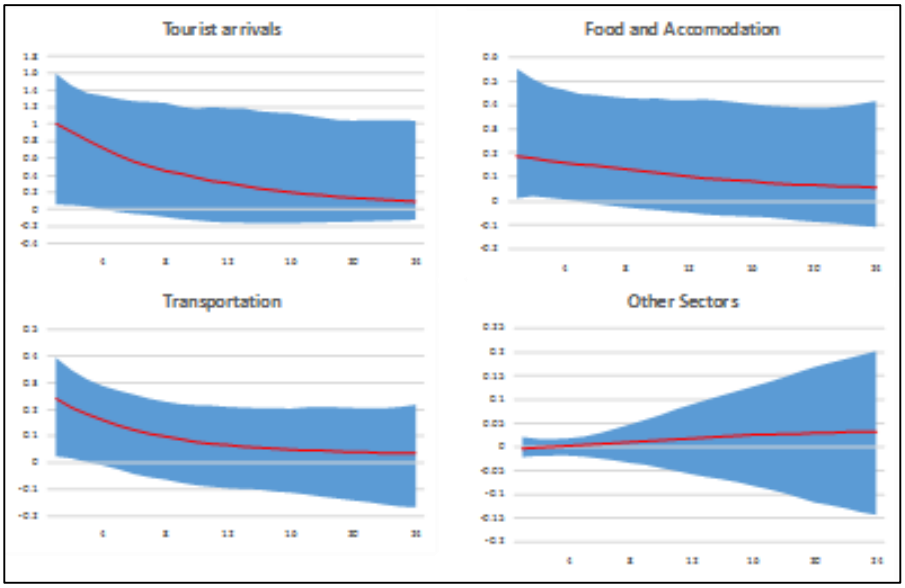
Figure A.1. Impulse Responses to a Positive 1 Percent Tourism Shock

(*percentage difference from baseline*)

1.A. Model 1: BVAR Model with Real Tourism Revenues, Sample 1998:1–2016:2



1.B. Model 4: BVAR Model with Tourist Arrivals, Sample 2003:1–2016:2



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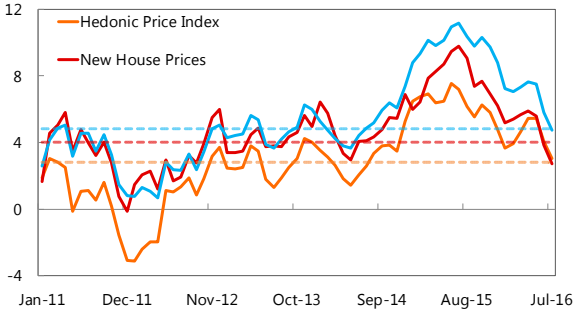
UNDERSTANDING TURKISH RESIDENTIAL REAL ESTATE DYNAMICS[1]

Turkish housing valuations appear to be stretched benchmarked against a variety of standard metrics. However, macroeconomic spillovers from housing market risks may be contained, as the household sector still has buffers to cushion against possible price corrections. House prices show a strong relationship with financial and labor market conditions, as well as mortgage debt affordability. Housing developers, however, are highly leveraged with significant FX exposures, and relatively high NPL ratios.

A. Stylized Facts

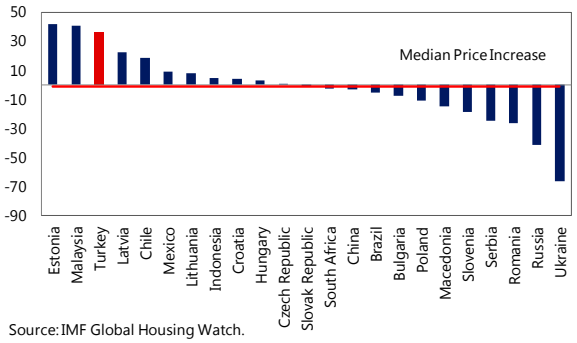
1. Turkey has experienced high cumulative real house price increases relative to other Emerging Economies (EMs). Headline house prices for existing homes rose by a cumulative 110 percent and 35 percent respectively in nominal and real terms from December 2010 to July 2016. Although there has been a recent reversion to the 5-year mean real price growth, it remains to be seen if this recent cooling will persist.

Real House Price Increases
(In percent yoy)



Source: CBRT.

Cumulative Real House Price Changes
(From 2010:Q1 to the latest observation, in percent)



Source: IMF Global Housing Watch.

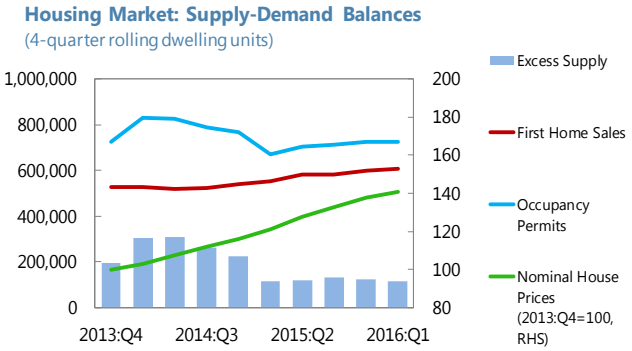
2. House prices have recently showed signs of moderating. Even as the difference between annual occupancy permits and new house sales—a possible gauge of excess supply[2]—has been positive, prices have been rising. Recently, however, this wedge has declined from its recent peak of some 300,000 units in 2014:Q2 to 116,000 units in 2016:Q1 mainly due to

[1] Prepared By Recai Çeçen and Erdem Ataş.

[2] The difference between occupancy permits and new house sales is used as a proxy to gauge supply conditions with the former representing the new houses built and readily licensed for residential use, and the latter representing buyers' willingness to purchase new houses.

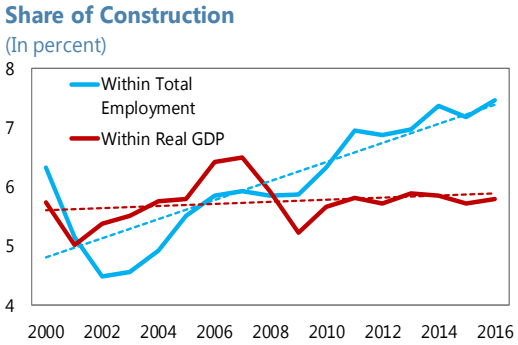
a cut in occupancy permits. Concomitantly, house price growth has also recently shown signs of moderating[3].

3. The share of the construction sector's value-added has remained moderate, despite signs of excess construction activity. However, the construction sector accounted for a higher share within total employment than in GDP, suggesting an increasing trend in the sector's employment generation ability with lower productivity, or relatively higher productivity growth in other sectors.



Source: CBRT; and TURKSTAT.

4. The government plays several important roles in shaping the real estate market. A key channel relates to urban regeneration plans to rebuild the existing stock of buildings prone to disaster risks (Box 1). Another important channel is through the activities of the government's Mass Housing Administration (TOKI) in charge of social housing for poor and low-income groups (Box 2). Also, in specific case of Istanbul, the government has also embarked on some mega projects including the Istanbul Financial Centre, Istanbul 3rd Airport and Channel Istanbul projects, which may all have important implications for the housing market.



Source: TURKSTAT.

5. The government has recently taken counter-cyclical policy actions to stimulate housing demand. Starting in February 2016 to improve debt affordability of low-income households, the government announced matching contributions equivalent to 15–20 percent of the household savings (capped at TL 15,000) for the first single home purchases. The government has also increased the LTV ratio from 75 to 80 percent, and cut the VAT temporarily from 18 percent to 8 percent for luxury houses.[4] In addition to these government measures, 49 private developers have offered some 60,000 houses at below-market lending rates and higher LTV ratios, as part of a temporary sales campaign. Banks have cut the lending rates on mortgage loans (from 13.8 percent compounded in June to 12.1 percent) in late October, against the backdrop of the President's call for lower mortgage rates.

[3] Continued price growth amid such conditions is difficult to explain, even taking into account improvements in housing quality which may account for one fourth of cumulative nominal house price increase and half of cumulative real house price increase over December 2010 to July 2016.

[4] Please see Annex II.

Box 1. Urban Regeneration

Urban regeneration efforts to reduce urban disaster risks have gained momentum since 2012. The main areas of focus of the government's 10th Development Plan for 2014–2018 are the reduction of disaster risks, and the removal of infrastructure bottlenecks and slum areas. In line with these policy goals, local governments were mandated to pursue urban regeneration in 2005 by a new municipality law. This was followed by enforcement of the Urban Regeneration Law 6306 in 2012 which tasked (primarily) the Ministry of Environment and Urbanization with identification and renewal of risky buildings in disaster prone zones, with TOKI participation.

The countrywide stock of existing residential units that are prone to disaster risks appears to be significant. Buildings erected before 2000 are regarded to be prone to earthquake risks due to less stringent building codes at the time. According to the 2014 Household Budget Survey, 71 percent of households live in such buildings. According to the estimates by the Ministry of Environment and Urbanization, out of 19 million existing residential units countrywide, 14 million need testing for compliance with stricter building codes set after the 1999 Marmara Earthquake, and the demolishment or reinforcement of up to 6–7 million of residential units may be needed. Given the scale of intended urban generation, extensive improvements are needed in technical, financial and administrative capacities of central and local governments, with significant private sector involvement.

Istanbul's size and seismic sensitivity make it central to urban regeneration. Urban Regeneration Plans have been programed to start from those provinces with the highest-earthquake risk, putting Istanbul, alongside Kocaeli, Sakarya, Bursa, and Izmir as the top targeted provinces.

The government offers tax incentives and subsidies in support of the urban generation plan. In addition to tax and statutory fee advantages, the government has offered assistance to inhabitants of disaster-prone buildings during renewal and reinforcement phases through rental support, subsidized loans from private banks and expropriation payments, totaling TL 2.5 billion since 2012.

Urban regeneration is likely to have significant impact on house price dynamics. Given extensive of nature of the urban regeneration plans and TOKI's capacity constraints, collaboration with private housing developers is a necessity. Continued progress in urban regeneration will take time, and may have significant implications for supply and demand balances in the housing sector going forward.

Box 2. Housing Development Administration (TOKI)

TOKI is a public agency in charge of social housing. Founded in 1984 to address urbanization induced housing needs of the poor, TOKI acts as a public agency to facilitate private developer provision of low and middle-low income housing. TOKI has operated through a revenue sharing model with private developers for land development and housing supply on a large scale.

Social housing accounts for around 85 percent of TOKI's total portfolio. Cumulative housing units developed by TOKI reached 750.1 thousand through October 2016, Within the overall housing units built by TOKI, 43 percent is reported to be developed for middle-income housing, 20 percent for the poor and low-income households, 16 percent under the urban regeneration and slum transformation programs, and 5 percent for housing provision under disaster relief.

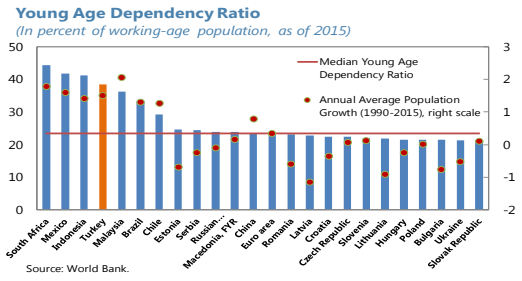
Over time, TOKI's mandate has also expanded into the upper-end of the housing market. High income housing development has accounted for the remaining 14.8 percent of its construction portfolio through October 2016. The size of the TOKI's balance sheet reached US$2.3 billion (3 percent of GDP) with a net profit of US$ 1.8 billion, as of 2014.

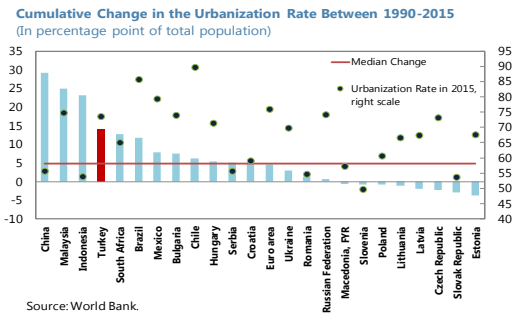
A large portion of households are eligible to purchase TOKI's social housing units. As of October 2016, TOKI's social housing units offered to the poor and low-income households required the eligible households to have a net monthly household income below TL 3,700 for those households living in Istanbul and below TL 3200 for the rest of the country. Per the 2014 Household Budget Survey, 57 percent of total households were thereby eligible to purchase TOKI's social housing units targeting poor and low income groups. Furthermore, sales of TOKI housing units have been also backed up by subsidized mortgage loans, implying that TOKI was not only in competition with private housing developers, but also with the banking sector.

TOKI's activities may have significant implications for the housing market, beyond its original social goals. The "revenue sharing" model whereby TOKI provides government land to private construction contractors have incentivized TOKI to get more involved in lucrative development projects at the upper-end of the housing market. The proceeds gained from such activities may have provided resources to subsidize lower end housing, but may have contributed to "oversupply" at the higher end of the residential market.

6. Demographic and social factors play significant roles in underpinning housing demand.

7. A young and rapidly growing population with high and steeply rising urbanization rates increases demand for housing.





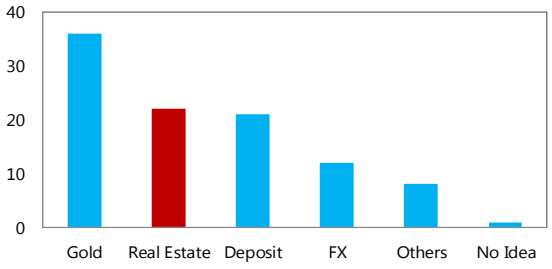
- Changing family structures and household preferences are also supportive for housing demand. The number of households has increased with a decline in average household size.
- Against the background of inflation and uncertainty, houses are seen as desirable assets to hold. Therefore, home ownership, and ownership of multiple houses have increased over the last few years.
- With increasing income, households prefer newer and larger houses.

Housing-Related Household Sector Indicators

	2010	2011	2012	2013	2014
Number of Households (in mln)	18.8	19.3	20.1	20.5	21.4
Household Size (in persons)	3.8	3.7	3.7	3.6	3.5
House Ownership (in percent of overall households)	60	59.6	60.6	60.7	61.1
House Purchases over the Last 5 Years (in percent of overall households)	11.4	12.9	12.7	13.9	14.1
Multiple House Ownership (in percent of overall households)	7.9	7.7	7.6	7.9	9.3
Tenancy (in percent of overall households)	22.1	22.2	20.9	21.3	22.1
Residence in New Houses (in percent of overall households)	6.6	10.6	13.1	16.2	18.7
House Size (in metersquare)	103	103	105	105	107

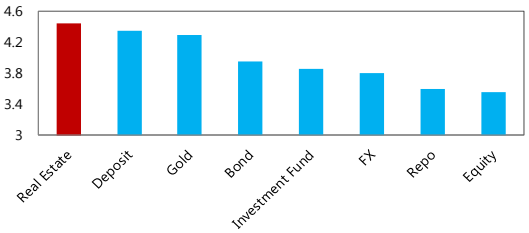
Source: TURKSTAT Household Budget Surveys

Household Investment Instrument Prefernces
(In percent)



Source: Capital Markets Board of Turkey,

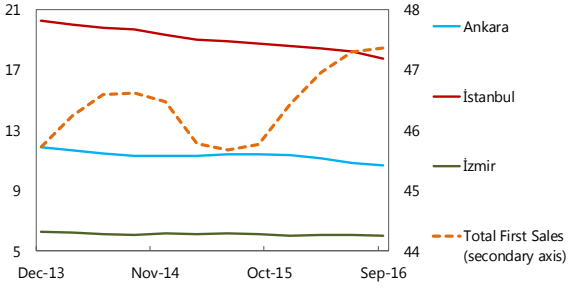
Household Prospensity to Re-invest in the Same Instrument
(In percent)



Source: Capital Markets Board of Turkey,

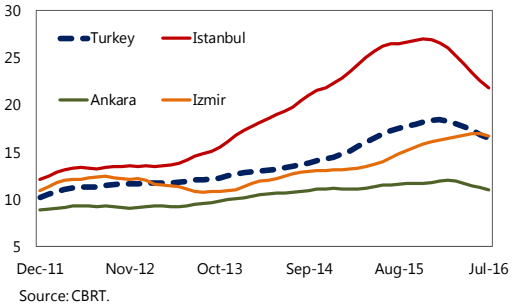
8. The housing market exhibits significant variations across cities, and income groups. Istanbul's size gives it a very heavy weight in aggregate indices of house prices and sales. Even within Istanbul, housing supply and demand as well as pricing dynamics vary at the district and neighborhood level. In addition, house prices vary significantly across different income groups, as the prices of houses of the richest and poorest households stand respectively at 157 percent and

House Sales by Cities
(4-quarter rolling, percent of Total House Sales)



Source: TURKSTAT.

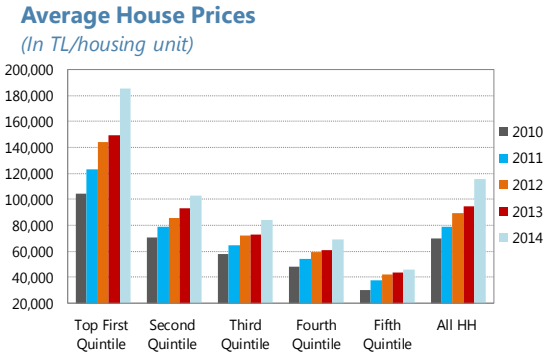
House Price Growth in Metropolitan Cities
(12-month rolling, annual growth, percent)

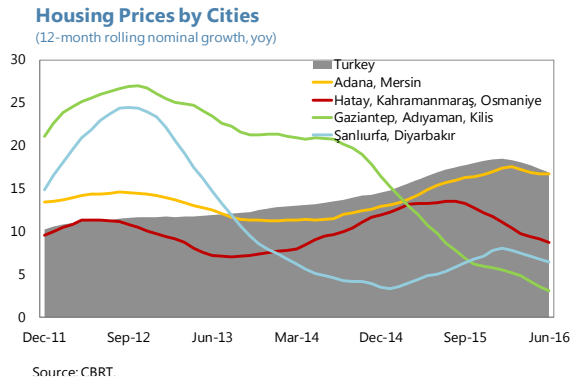


Source: CBRT.

44 percent of the overall average house price. Regional variations in level and growth of house prices have been further accentuated by the presence of more than 2.7 million Syrian refugees since March 2011. Those cities near the Syrian border, such as Gaziantep, Kilis, Hatay, Adana, and Sanliurfa which have absorbed larger masses of Syrian refugees have seen significant rises in local housing prices since 2011, though they have moderated in recent years.

9. There are important data gaps in housing price indices. There are two commonly followed housing price indices—one produced by the CBRT, and the other by a private real





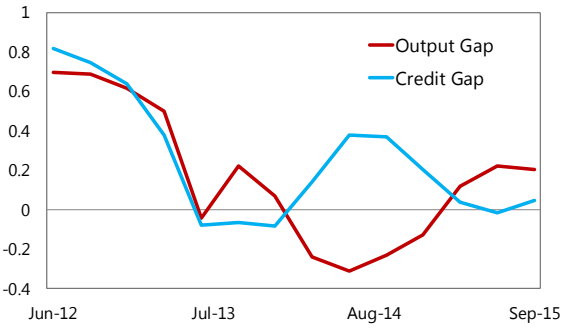
estate information company (REIDIN), with major differences in terms of coverage and methodology. CBRT House Price Indices start from January 2010 and are based on valuation reports prepared country-wide by real estate appraisal companies for the extension of mortgage loans by banks. Whereas REIDIN House Price Indices start from June 2007 and are based on listed residential sales offer or ask prices quoted by private developers from a smaller number of major cities. CBRT indices also lack house price data at intra-city level, wherein there may be large variations.

B. Turkish House Prices and Standard Valuation Metrics

10. The relationship between house prices and business and credit cycles appears to be weakening. An analysis of the house price gap, defined as the difference between actual price and trend, suggests that price dynamics appear to have turned counter-cyclical, and increasingly disconnected from the output and mortgage credit cycles.[5] The 5-year rolling correlations of house prices with output and mortgage credit cycles are positive and have weakened through late 2014, as the pace of the real house price growth begun to surpass its long-run average.

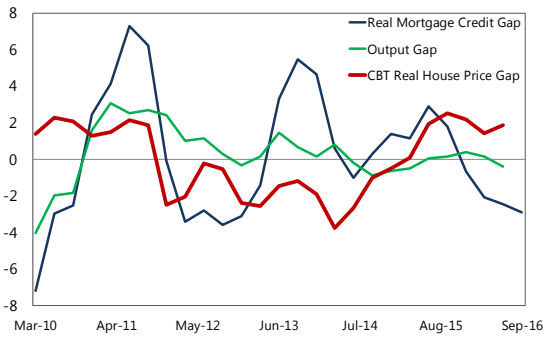
[5] Widely used in the literature, the HP-filter technique has been employed to extract the gap between actual and long-term trend values relative to the trend, and is defined as follows: $\text{Gap} = (\frac{Actual-Trend}{Trend}) \times 100$

Correlations with Housing Price Gap
(10 quarter rolling correlations)



Source: TURKSTAT; CBRT and IMF Staff Calculations.

House Price Cycles
(In percent deviation from the HP-filtered underlying trend)

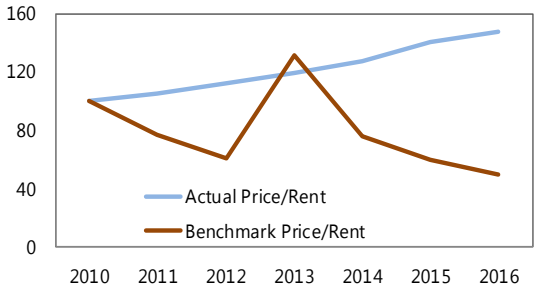


Source: CBRT; and TURKSTAT.

11. The Price-to-Rent ratio is one of the standard measures to assess house price valuations. The house price-to-rent ratio compares the cost of owning of a house with the cost of renting. If the former gets too stretched, potential house buyers may opt to rent a house rather than buying, which may be captured by high and rising price-to-rent ratios. Using the Asset Pricing approach, actual price-to-rent ratios are compared with a computed benchmark reflecting fundamentals. A notional user cost of housing at housing market equilibrium has been computed (Box 3). A positive and widening gap between the actual price-to-rent ratio and benchmark price-to-rent ratio may be indicative of stretched house prices.

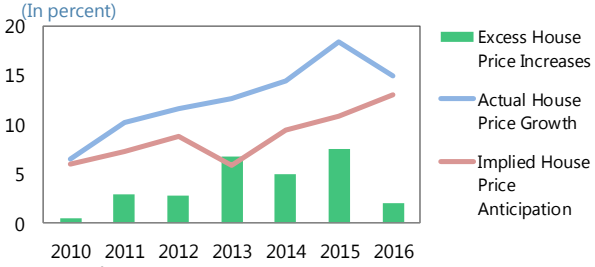
12. House price valuations appear stretched on the basis of Price-to-Rent metrics. A growing positive gap between the actual and benchmark price-to-rent ratios suggests that house price valuations may be somewhat overvalued due house price increases that are well above rent increases. Alternatively, if the actual house-to-price ratios are assumed to reflect equilibrium in the housing market, (implying that price-rent relation based on the user cost holds), the implicit anticipated nominal house price increases derived from the equilibrium equation remains well below the actual nominal house price growth.

Unit Cost of Housing: Price to Rent Ratios 1/
(2010=100)



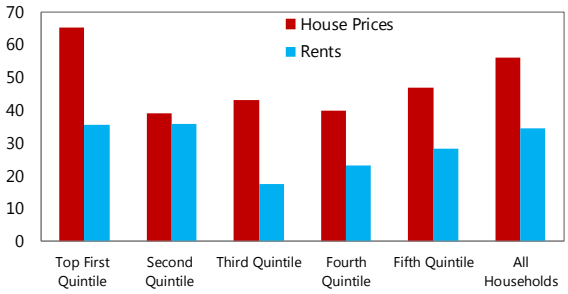
1/ 2016 figures covers the January-August period.
Source: TURKSTAT; CBRT and IMF Staff Calculations.

Nominal House Price Growth: Annual vs. Equilibrium Valuations 1/
(In percent)



1/ 2016 figures covers the January-August period.

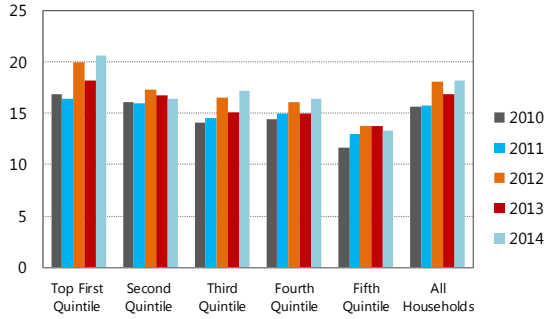
House Price and Rent Increases over 2010-2014
(In percent)



Source: TURKSTAT Household Budget Survey.

13. House price valuations relative to *rents* appear less stretched for lower-income households. Higher income households have seen rising housing valuations with respect to rents over years. However, the households with the lowest incomes seem to have seen an improvement in their house price-to-rent ratios. This may be related to TOKI's intensive efforts to provide subsidized new social housing facilities to the poorest.

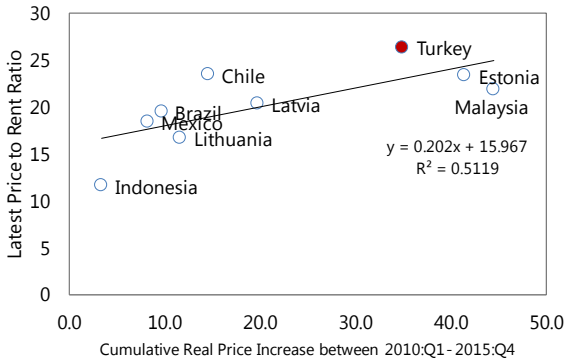
House Price/Annual Rent
(In years)



Source: TURKSTAT Household Budget Survey.

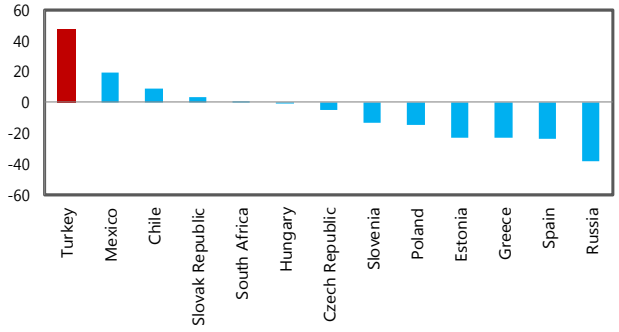
14. On a cross-country basis, Turkish price-rent ratios appear high. If the latest Price-to-Rent ratios are compared with cumulative real price increases of other EMs (for which data are available, and which posted cumulative real price increases), Turkish Price-to-Rent ratios look high. Furthermore, Turkey seems to lead its peer countries in terms of the cumulative change in the Price-to-Rent ratio from 2010:Q1 to 2015:Q4.

Price to Rent Ratios



Source: IMF Global Property Guide.

Cumulative Change in Price-to-Rent Ratio
(From 2010:Q1 to the latest observation, in percent)



Source: IMF Global Housing Watch

Box 3. Constructing the User Cost of Housing

In deciding on whether to own or rent a house, potential home buyers compare the marginal utility from renting an additional unit of housing to its marginal user cost of owning. The user cost of housing is the difference between the financial costs and benefits of house ownership over a period of time. It equals to the sum of various ownership costs, namely after-tax house depreciation, recurrent maintenance costs, property taxes, risk premium for ownership-related uncertain costs, mortgage interest payments, and the opportunity cost of housing equity, minus financial benefit from owning, namely the after-tax anticipated capital gain. While the financial costs of ownership are mostly determined by market rates, the assumptions on how household expectations for the after-tax capital gains formed is a crucial component in that it may set the stage as to whether it is financially more feasible to own or rent a house. If the expected capital gains largely dominate over financial costs of owning housing, it may lower the (net) user cost of owning relative renting at market rates, thus increasing demand for house ownership.

In this paper, the User Cost of Housing is computed on an annual basis along the formula below, assuming an LTV ratio of 25 percent for ownership equity.

$$\text{User Cost of Housing} = \text{P}(25\%\ \text{i}_\text{d}\ +\ 75\%\ \text{i}_\text{m}\ +\ \text{m} - \pi) \qquad (1)$$

P represents the house price. The first item in the parentheses captures the after-tax opportunity cost of the 25 percent down payment of the mortgage loan if deposited in a bank at an interest rate of $\boldsymbol{i_d}$**.** The second item represents the after-tax cost of the mortgage interest payments at a lending rate of i_m . The variable *m* consists of the recurrent maintenance costs (0.6–0.7 percent as derived from Household Surveys) property tax (0.1 percent by regulation), depreciation (2 percent by assumption), risk premium on the residential property (0.5 percent by assumption), all expressed in percent of the house price. Π stands for the anticipated after-tax rate of capital gain from house price appreciation, which is assumed to be based on the historical long-term average real price increase (exclusive of tax on capital gain) of 5.5 percent over the 12-month ahead CPI inflation expectation.

In equilibrium at the housing market, the potential cost of owning a house is assumed to be equal to the annual cost of renting R, implying that the User Cost of Housing can be rearranged as

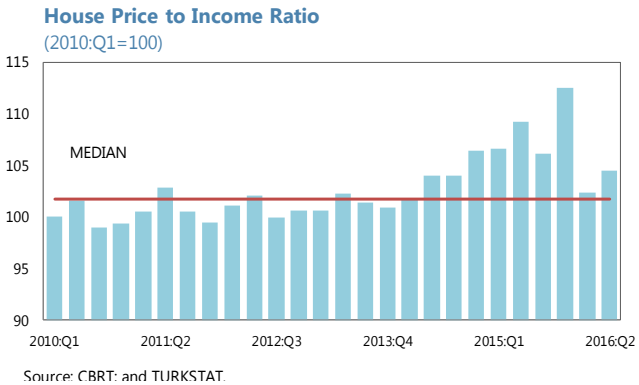
$$\text{R} = \text{P}(25\%\ \text{i}_\text{d}\ +\ 75\%\ \text{i}_\text{m}\ +\ \text{m} - \pi)$$

$$\text{Benchmark Price to Rent Ratio: } \frac{\text{P}}{\text{R}} = \frac{1}{(25\%\ \text{i}_\text{d}\ +\ 75\%\ \text{i}_\text{m}\ +\ \text{m} - \pi)}$$

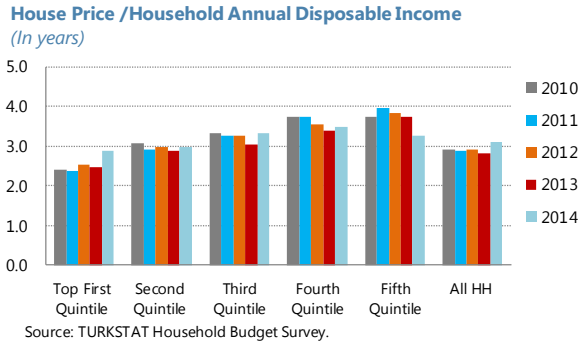
In order to compare with the actual house price-to rent ratios, the price-to-rent ratios calculated from the last equation is used a benchmark measure that approximates the economic fundamentals.

In line with the literature, the price-to-rent ratios have been calculated as the ratio of the nominal house price index to the rent component of the CPI.

15. Recently income affordability for the average household has improved. The house price-to-household income ratio[6] based on macro data rose notably from 2014:Q1 to end-2015 as house prices increased in excess of growth of household earnings. In 2016, however, house price-to-household income ratio has improved possibly due to the deceleration in house price growth and higher incomes due to a 30 percent increase in the net minimum wage.

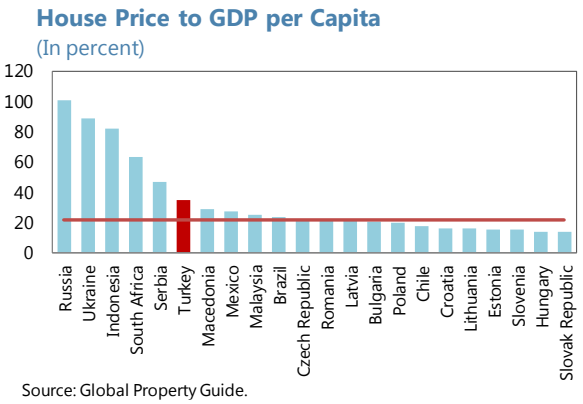


16. The poorer sections of Turkish society have enjoyed an increase in access to housing due to government programs. Household Budget Surveys show that households at the upper end of the disposable income distribution have experienced housing affordability erosion due to higher house prices. On the other hand, the lower income households seem to have witnessed an improvement in housing affordability of their income, linked to government provision of subsidized social housing programs. Improved housing affordability for lower income households may have been supportive for housing demand and prices, especially when complemented with increased *debt* affordability of households (below).

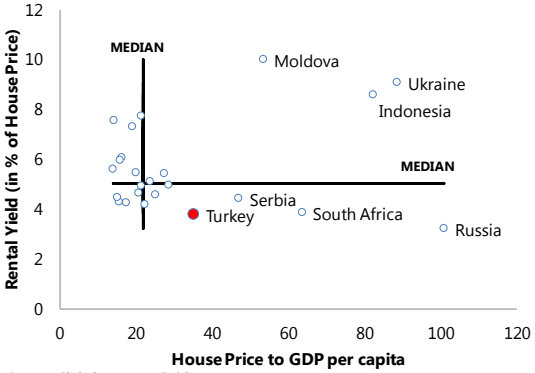


17. Income affordability of house prices looks less favorable in Turkey relative to other EMs. The ratio of House Price-to-GDP per capita appears to be higher than the corresponding median ratio for a sample of emerging market countries. Compared to sample medians for a group of EM countries, the house valuations are less affordable with respect to household income while rental yields are lower in Turkey than in many EMs.

[6] The house price to income ratio is derived as the ratio of the nominal house price index to the aggregate hourly earnings index covering the industry, services and construction sector.

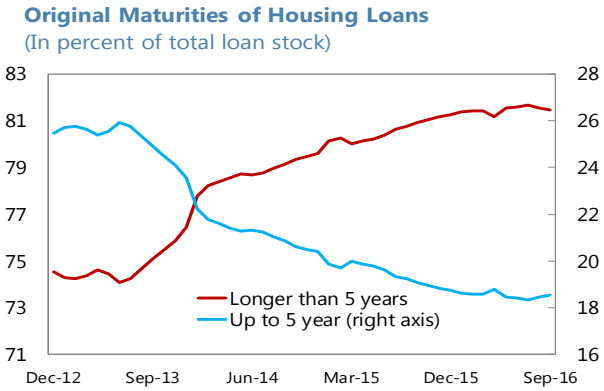


Source: Global Property Guide.

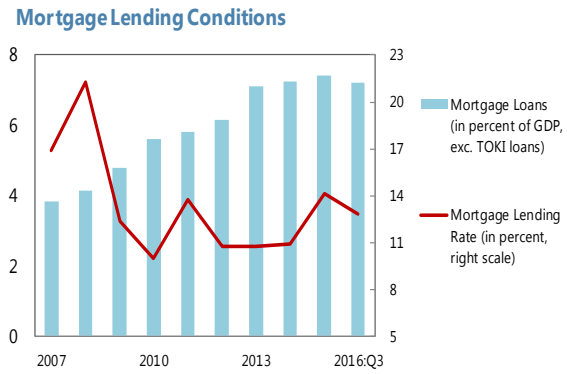


Source: Global Property Guide.

18. Household debt affordability improved significantly, mainly due to mortgage market deepening. Mortgage lending rates have declined appreciably over the last eight years, while maturities of mortgages have lengthened, and the share of disposable of income in GDP has risen due to higher employment rates. As a result, the number of households who can access and afford an average mortgage loan rose to 31 percent of households in 2014 from 20 percent in 2008[7].



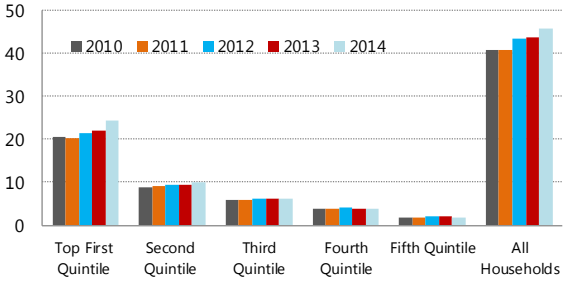
Source: CBRT.



Source: CBRT and IMF staff calculations.

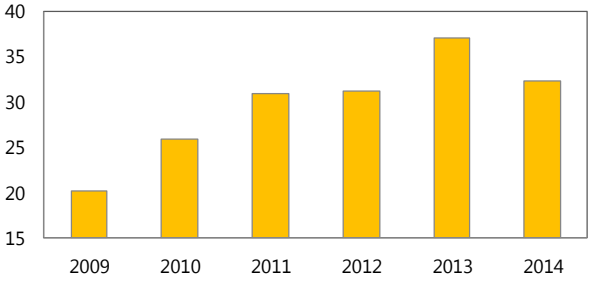
[7] Calculations to impute the percentage of households capable of affording an average mortgage loan are based on the Turkish Bankers Union's flow data on mortgage loans from where the average mortgage loan per borrower is derived. This is likely to reflect valuation effects on the average mortgage loan from higher house prices. Thus debt affordability calculations factor in the rises in house valuations. On the other hand, the debt affordability calculations are based on an unchanged maturity of 5 years for a typical mortgage loan.

Household Disposable Income
(In percent of GDP)



Source: TURKSTAT Household Budget Survey.

Households Capable of Affording an Average Mortgage Loan
(In percent total households)



Source: TURKSTAT, CBRT, IMF Staff Calculations.

C. Housing Market and Economic Fundamentals

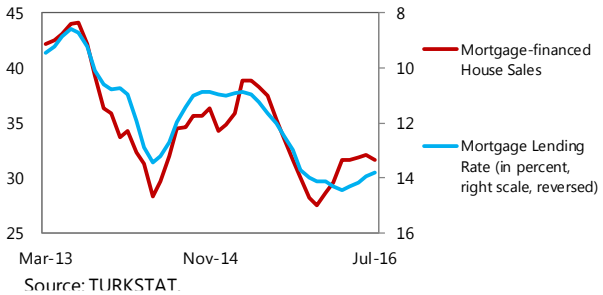
19. This section takes an econometric approach to examining house price dynamics with respect to a broad range of economic factors. Its main findings are summarized immediately below:

- The housing market is associated more directly with domestic factors than with global factors, which may still manifest themselves through indirect yet powerful channels.
- Number or houses sold appear to have a relatively strong association with the overall business cycle.
- House prices have a strong relationship with the domestic liquidity, and labor market conditions.
- On the other hand, real house pricing dynamics seem to show a strong statistically significant links with factors supportive of household debt affordability, while the pricing cycle seems to be unresponsive to housing market-specific factors.
- If combined with the earlier findings that house prices might be stretched with a disconnection from the overall business cycle, the empirical findings may point to presence of possible pricing excesses on the supply side.

House Sales

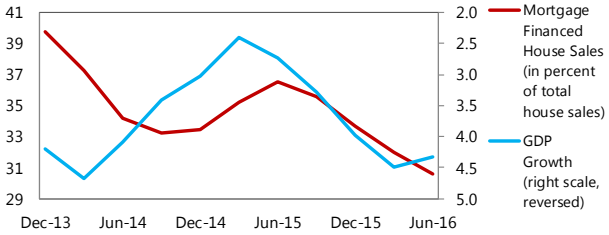
20. Housing sales reflect highly cyclical behavior. Sales are strongly related with mortgage interest rates and real wages, implying a possibly strong association with overall business cycle. The strong correlation between mortgage lending rates and mortgage-financed house sales has started to weaken from late 2015 through July 2016, possibly due to decline in the consumer confidence and increased shadow banking activities by the private housing developers, which tended to offer subsidized mortgage loans at more favorable lending terms compared to the terms of banks' mortgage loans. A one percentage point q-o-q decline in mortgage lending rate is associated with an almost 3 percentage point q-o-q increase in house sales growth. A one percentage point q-o-q increase in the hourly earnings is associated with 2 percentage point q-o-q increase in house sales growth.

Mortgage-financed House Sales
(In percent of total house sales, 3mma)



Source: TURKSTAT.

Overall Business Cycle and Mortgage-backed House Sales
(4-Quarter rolling)



Source: TURKSTAT.

Model A: House Sales Model [1]

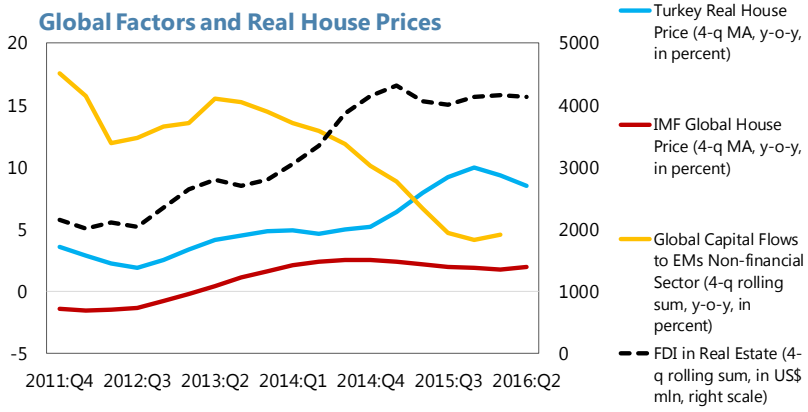
	(Model 1) House Sales
1-quarter lag of House Sales	0.392**
	(2.26)
Mortgage Lending Rate	-3.171**
	(-2.80)
Hourly Earnings	2.117**
	(2.77)
Dummy for Q2	0.161**
	(2.69)
Constant	-2.248
	(-1.15)
Number of Observations	33
Adjusted R-Squared	0.86

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

[1] Please see Annex I for the model specification details.

House Prices

21. Domestic real house prices have a weak association with global factors. The correlation between domestic real house price changes and global factors, including changes in global house prices and capital flows to the non-financial sector in EM countries appears to be weak. In case of the FDI inflows to the Turkish property market, the correlation with the Turkish real house price increases has been strong through 2015:Q1, perhaps in part owing to the governments easing of the restrictions on foreigners' property acquisitions in 2012, but has subsequently weakened[8]. Broadly speaking, global factors impact may manifest through indirect channels, given the banking sector's heavy reliance on external funding in intermediating global funds into domestic credit expansion.



Source: IMF Global Housing Watch; BIS, and CBRT.

22. Domestic real house price increases show an association with a broad range of domestic factors. The money supply as well as lending and labor market conditions appear to have a broad direct association with the real house price changes.

[8] The new arrangement enforced in 2012 on foreigners' real property purchases in Turkey has increased the upper limit of the land that can be sold to foreigners and also expanded the coverage of countries that are eligible to buy property in Turkey.

Model B: House Price Model [1]

	(Model 1) House Price	(Model 2) House Price	(Model 3) House Price	(Model 4) House Price
1-quarter lag of House Price	0.938***	0.942***	0.897***	0.954***
	(34.44)	(26.50)	(21.86)	(21.33)
DEBT AFFORDABILITY VARIABLES				
Liquidity Conditions	0.406***			
	(6.92)			
Unemployment	-0.344			
	(-1.69)			
Mortgage Lending Rate		-0.433***	-0.239	-0.424**
		(-3.40)	(-1.40)	(-3.24)
Hourly Earnings		0.213***	0.167**	0.185**
		(3.84)	(2.11)	(2.25)
HOUSING MARKET VARIABLES				
House Sales			0.0289	
			(1.48)	
Construction Cost				-0.0513
				(-0.47)
Dummy for Q3	0.0177**	0.0164**	0.0192**	0.0181**
	(2.29)	(2.33)	(2.68)	(2.27)
Constant	0.0908	-0.696**	-0.661**	-0.388
	(0.76)	(-3.75)	(-3.39)	(-0.57)
Number of Observations	35	34	35	35
Adjusted R-Squared	0.98	0.98	0.98	0.98

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

[1] Given that CBRT House Price Data starts from 2010, REIDIN House Price Indices for Turkey were used in regression analysis in order to maximize the number of observations. Please see Annex I. for the model specification details.

23. Factors Supportive of Debt Affordability

- **Liquidity Conditions [+]:** A one percentage point q-o-q increase in M2 money supply-to-GDP ratio is associated with 0.4 percentage point increase in q-o-q growth in the real house prices, most likely reflecting positive association with increased liquidity.

- **Mortgage Interest Rate [-]:** The changes in the real mortgage interest rate have a statistically significant relationship with the real house price growth with expected sign. A percentage point q-o-q decline in the real mortgage lending rate has an association with a 0.4 percentage point q-o-q increase with the real house price increases.

- **Hourly Earnings [+]:** A one percentage point q-o-q increase in household real earnings growth is associated with a 0.2 percentage point q-o-q growth in real house prices.

24. Housing Market-Specific Factors

- **House sales [+]:** On the sales side of housing market, real house price growth appears to be surprisingly unresponsive to the changes in the house sales, which themselves have quite a cyclical nature linked to the overall business cycle. This may be in conformity with the earlier findings in Section B that house pricing cycle might be disconnected from the overall business cycle. Accordingly, a one percentage point q-o-q increase in house sales growth has a surprising and statistically insignificant association of a mere .03 percentage point increase in the q-o-q real house price growth.

- **Construction Cost [-]:** On the supply side of the housing market, real changes in the construction cost seem to have a negative but statistically insignificant relationship with the real house price growth, suggesting that pricing dynamics may be delinked from cost-push factors.

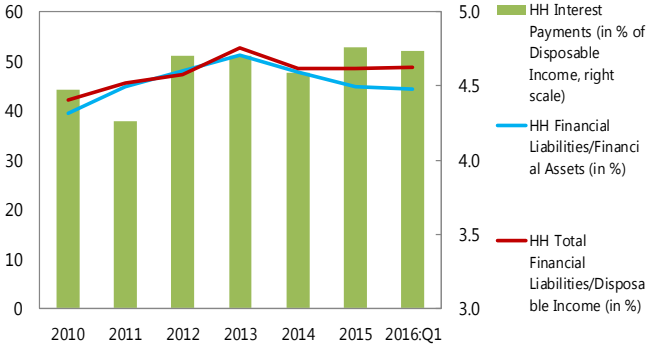
D. Risk Outlook

Macro-financial Risks Associated with the Household Sector

25. Household indebtedness has risen notably while saving has remained low and unevenly distributed. Household saving has remained very low for a long time (at 9 percent in 2015), and overall household liabilities as a share of disposable income have risen to 51 percent in 2015 from 34 percent in 2009 in the wake of the Global Financial Crisis, reflecting strong consumer lending growth until recently. The household leverage ratio (the ratio of overall financial liabilities-to-assets) rose by 15 percentage point to 51 percent in four years from 2009 to 2013. This ratio has declined again to 44 percent in 2015, thanks to tighter macro-prudential measures introduced in 2013 to contain consumer loan growth.[1] With increased indebtedness, household interest payments as a share of disposable income have risen since 2009 but still remain low at 5 percent, largely helped by low interest rate environment, which may not be permanent. Household financial net worth has also recently improved to 27 percent of GDP mainly due to a rise in the household financial assets which may be prone to changes in asset prices if the current external environment changes.

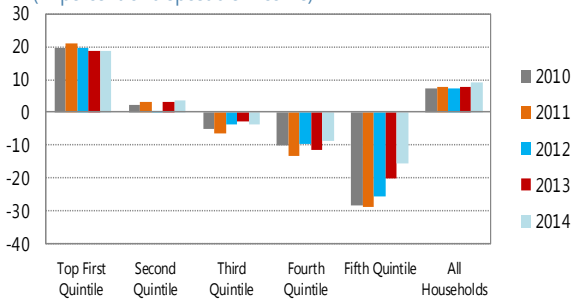
[9] These measures have very recently been loosened.

Turkey: Household Debt Burden 1/



Source: BRSA, CBRT Financial Accounts Database.
1/ Household interest payments include the interest paid to the deposit and participation banks. In addition, disposable income is calculated via aggregating micro level data from Turkstat's Household Budget Surveys.

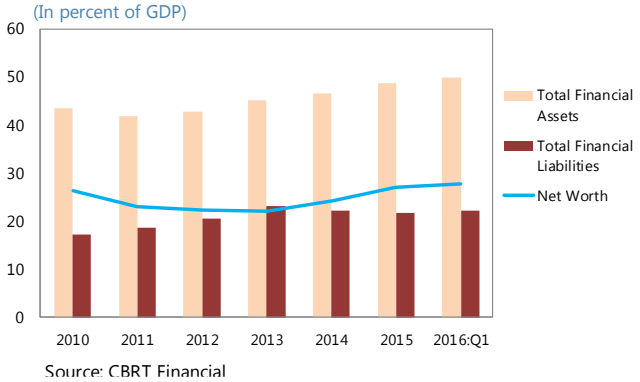
Household Savings
(In percent of disposable income)



Source: TURKSTAT Household Budget Survey.

26. Households may have become more sensitive to income and debt service shocks, due to higher leverage. Households may respond to such shocks by reducing consumption in their cash flow rather than defaulting on repayment of loans. Therefore, as suggested by many empirical studies, the sensitivity of consumption to shocks may increase with higher household indebtedness. Furthermore, banking sector exposures to higher household leverage outside of real estate also need to be closely monitored.

Households Financial Assets and Liabilities
(In percent of GDP)



Source: CBRT Financial

27. Household leverage with respect to house purchases still remains low. Mortgage loans extended by banks and non-bank financial sector almost doubled as a share of GDP over the last decade. However, housing loans including TOKI loans stand at a mere 7.8 percent of GDP through the third quarter of 2016 with extremely low NPL ratios for mortgage loans, probably helped by cumulated capital gains on mortgaged-housing assets.

28. The household sector still has buffers, although diminished in recent years. House price increases have boosted the value of households' property inventory that could be used as loan collateral, implying that households' individual loan-to-value ratios may have been supported through a denominator effect. Besides, a low overall interest-to-disposable income ratio creates contingency buffers. Furthermore, household level data suggest that mortgage debt appears mostly concentrated in upper income groups with relatively stronger savings and property buffers.

Household Loans (In percent of GDP)

	2010	2011	2012	2013	2014	2015	2016:Q3
Total Household Disposable Income 1/	40.8	40.9	43.3	43.7	45.9	45.0	45.4
Total Consumer Loans	17.8	19.4	21.0	23.6	22.7	22.3	21.3
Housing Loans 2/	..	..	6.9	7.8	8.0	8.0	7.8
extended by banks and non-bank financial sector	5.6	5.8	6.1	7.1	7.2	7.4	7.2
extended by TOKI 3/	..	..	0.8	0.8	0.8	0.6	0.6
Automobile Loans	0.8	0.9	0.9	1.0	0.8	0.8	0.8
Personal Finance Loans and Others	5.9	6.8	7.3	8.5	8.9	8.5	8.0
Credit Card Loans	4.4	4.5	5.2	5.6	4.5	4.4	4.2
Asset Management Companies NPL Receivables 2/	..	..	0.6	0.7	0.5	0.6	0.6
Total Household Loans by Creditors	17.8	19.4	21.0	23.6	22.7	22.3	21.3
Banks	16.4	17.7	19.2	21.7	20.9	20.6	19.6
Consumer Finance Companies	0.3	0.4	0.4	0.5	0.5	0.5	0.6
TOKI 2/	..	..	0.8	0.8	0.8	0.6	0.6
Asset Management Companies	..	..	0.6	0.7	0.5	0.6	0.6

1/ Household disposable income for 2016:Q2 has been estimated by assuming that the ratio for 2015 of household disposable income to total private disposible income will remain unchanged as of 2016:Q2. In addition, private disposible income has been estimated by assuming that the Medium Term Program (MTP) ratio for 2016 of private disposable income to GDP will be the same as of 2016:Q2.

2/ Includes TOKI Loans and NPLs.

3/ Data cited in the CBRT Financial Stability Reports for Q3 each year.

Source: CBRT; BRSA and TURKSTAT.

29. Prudent financial regulations help containing risks associated with mortgage debt. Households are not allowed to borrow in foreign currency by law, and housing loans are mostly contracted at fixed rates. Enforcement of a regulatory LTV requirement for mortgage lending in 2010 has helped to contain risks associated with household mortgage indebtedness. The Tax code has featured no tax-deductibility for mortgage loans.

30. The Real Estate sector enjoys a special status in terms of tax provisions. Real Estate Investment Trust Funds have been exempted from the Corporate Income Tax of 20 percent and not are subject to a withholding tax on dividend payouts. Taxation of real property relies mostly on transaction taxes which may incentivize underreporting of valuations in real property transactions. Furthermore, financial intermediation taxes which are levied on interest payments of other consumer loans, have been abolished for mortgage loans to improve mortgage debt affordability. However, one major point in the other direction is that capital gains (at disposal) of property are subject to progressive tax rates as high as 35 percent.

Share of Indebted Households with Housing Debt

	Total Number of HH (In percent of overall total)		Total HH disposable income (In percent of overall total)		Total HH consumption (In percent of overall total)		Total HH Saving (In percent of overall total)		Multiple House Ownership (In percent of indebted HH)	
	2010	2014	2010	2014	2010	2014	2010	2014	2010	2014
Top First Quintile	2.4	4.6	4.8	8.8	3.6	7.1	20.5	26.2	6.3	7.5
Second Quintile	1.7	2.6	1.9	2.7	1.8	2.5	3.0	4.8	2.5	3.1
Third Quintile	1.0	1.4	0.8	1.1	0.9	1.2	0.3	0.9	1.1	1.7
Fourth Quintile	0.6	0.8	0.3	0.5	0.4	0.6	-0.8	-0.3	0.2	0.6
Fifth Quintile	0.3	0.3	0.1	0.1	0.2	0.2	-0.5	-0.3	0.0	0.3
All HH	5.9	9.5	8.0	13.3	6.8	11.6	22.5	31.3	10.1	13.1

Source: TURKSTAT Household Budget Surveys.

Risks Associated with the Housing Supply Side

31. High leverage poses significant risks for the construction sector. The construction sector has a leverage ratio well above the overall non-financial corporate (NFC) sector average. Access to bank lending has increased in recent years, albeit with a lengthening of maturities. However, the share of short-term funding within total liabilities remains higher than in the overall NFC sector, pointing to higher rollover risks. Equity buffers have recently eroded and remained below the overall NFC s, suggesting weaker loss-absorption buffers if adverse shocks materialize. Liquid assets have increased in recent years but still remain low relative the overall NFC sector average, posing liquidity and solvency risks. The return on assets has declined in recent years, but the return on equity is high relative to overall NFC Sector, due to higher leverage. Debt service capacity has weakened recently, but appears to be stronger than in the rest of the NFC sector.

Construction Sector: Selected Financial Ratios (In percent)

	2009	2012	2013	2014	2014 - Overall NFC Sector
Leverage					
Total Debt / Total Assets (Levarage Ratio) 1/	76.1	71.1	72.0	73.3	61.8
Total Debt/ Own Funds (Debt to Equity Ratio)	318.2	246.0	257.3	274.5	161.9
Shareholders Equity / Total Assets	23.9	28.9	28.0	26.7	38.2
Banks Loans/ Total Assets 2/	17.6	19.4	24.0	26.8	28.6
Debt Maturities					
Short Term Liabilities / Total Liabilities	57.0	48.5	46.1	44.2	37.2
Liquidity					
(Liquid Assets + Marketable Securities)/ Short Term Liabilities (Cash Ratio)	9.6	18.3	17.8	17.8	25.9
Profitability					
Net Profit / Own Funds (Return on Equity)	10.8	12.6	7.9	8.5	6.9
Net Profit / Total Assets (Return on Assets)	2.6	3.6	2.2	2.3	2.6
EBIT / Net Sales	8.4	8.6	8.1	6.4	4.4
Interest Expenses / Net Sales	3.8	3.5	4.3	4.6	3.1
Profit Before Interest and Tax / Interest Expenses (ICR)	354	516	315	294	214

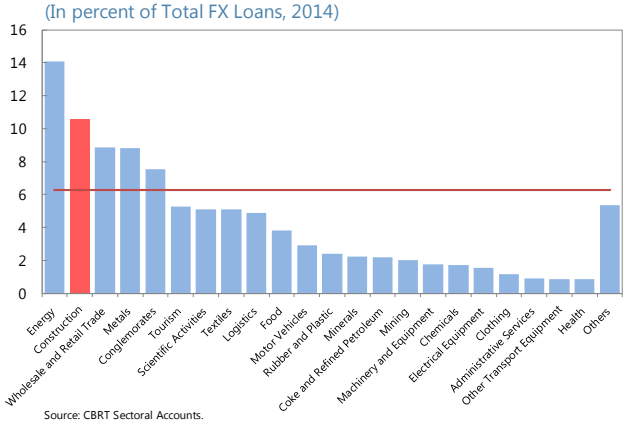
Source: CBRT.
1/ Total Debt refers to Total Non-Equity Liabilities

32. The construction sector is exposed to potential currency mismatches. The sector accounts for more than 10 percent of the overall NFC FX loans, well above the average NFC FX leverage with the second largest share within overall NFC FX loans, exposing the sector to significant exchange rate risks. Past episodes of protracted exchange rate weakening confirm that the construction sector NPLs—which already are quite high relative to the rest of NFC—may further rise if the currency's recent weakening were to continue unabated.

33. The construction sector's business model is also prone to risks. The practice of "pre-selling" houses (before construction is completed) and financing housing projects by advances from house buyers is a source of possible risk, as some firms have weak cash flow buffers, and project finance capacity is dependent on uninterrupted house buyer demand. Home

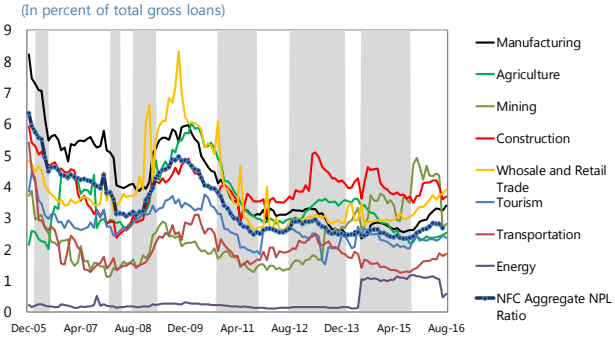
buyers take on a risk developers fail to complete their projects.[2] Since the sustainability of such a model requires buoyant sales, developer firms tend to launch subsidized sales campaigns offering mortgage loans at below-market rates, causing margin compression. On the other hand, lower profitability may push construction firms to develop large-scale projects under the pre-selling model to hold up earnings through volume increases, thereby adding to oversupply conditions. The business model may also cause pricing distortions, as developers may incrementally raise ask prices, to generate a perception of high capital gains even before completion of construction.

Sectoral FX Loans
(In percent of Total FX Loans, 2014)



Source: CBRT Sectoral Accounts.

NPL Ratios for Selected NFC Sectors
(In percent of total gross loans)



Source: BRSA.
Note: 1/ Shaded areas reprsents those periods of exchange rate depreciation of at least 15 percent from through to peak.

E. Summary and Policy Recommendations

34. The main findings of this paper are summarized as follows:

- Various metrics suggest that housing valuations may be stretched. However, macroeconomic spillovers of possible risks associated with housing price dynamics are likely to be contained mostly due to favorable factors supportive of housing demand, prudent regulatory norms on household borrowing, and low levels of buyer leverage.

- In terms of linkages with macroeconomic fundamentals, house price growth seems to have stronger associations with higher domestic liquidity, lower mortgage lending rates, and stronger labor market conditions.

- A weak association of house prices with house sales and construction costs indicate a disconnection with the overall business cycle and cost-push factors, even though house sale volumes are indeed closely associated with the business cycle.

[10] In order to mitigate house buyers' risks associated with possibly incomplete housing projects, the government amended the Consumer Protection Law in 2014, which requires developers to complete the pre-sold house projects with 36 months under the building completion insurance.

- The weak responsiveness of prices to housing-specific factors may relate to supply side pricing excesses driven by continued improvements in mortgage debt affordability, so long as households see property as a highly preferable asset to own.

- Construction companies are highly indebted, often in foreign currency, and some may have weak balance sheets and risky financing models. Their business model based on extensive use of presales is also fragile.

35. The following policy options may be worthy of consideration for the Authorities:

- Fill data gaps. Identify and bridge data gaps with more granular data particularly on prices, sales and permits at sub-provincial level with a longer time horizon, especially for key metropolitan cities.

- Assess financial soundness of the construction sector developers. Develop mechanisms to conduct periodic financial soundness assessments on the construction sector firms.

- Re-assess the regulatory arrangements relevant for the construction sector. Regulatory arrangements that allow foreign currency lending to construction firms with no FX income may be re-assessed. Regulatory arrangements may be tightened to further mitigate risks associated with the housing developers pre-selling business model.

- Tighten standards to contain risks related to shadow banking practices. Tighter regulatory and supervisory measures to contain risks stemming from mortgage-loans offered by the construction firms at below-market rates and above regulatory LTV ratios may be needed.

- Tighten macroprudential standards for construction sector loans. With a view to mitigating risks associated with high overall and FX leverage, further macroprudential and regulatory measures may also be considered, such as risk-weighted capital requirements, incremental provisioning requirements, and more binding concentration limits.

- Tighter lending standards and macroprudential measures for mortgage loans. Together with other macroprudential policy options for tighter borrowing standards, tightening in financial intermediation taxes on mortgage borrowing (see also Annex II) may also be considered.

- Re-assess tax advantages. Together with a re-assessment of overall tax incentives, the exclusive tax advantages granted with REITs could be re-evaluated. In addition to transaction taxes which cause underreporting of residential real estate valuations, further property taxes could be considered especially in case of overheating in the housing market.

- Lower the degree of informality in house purchase transactions. To combat widespread misreporting of transaction values, further measures may be considered to enhance electronic cross-check mechanisms, as well as better monitoring and registry capacity particularly at the title deed offices.

Annex I. Econometric Model Specifications[1]

Model A: House Sales Model

House Sales : ln Home Sales in Turkey

Mortgage Lending Rate : Annual Housing Lending Rate (in percent)

Hourly Earnings : ln Real Hourly Earning

Variable	Observations	Mean	Std. Dev.	Min	Max
House Sales	34	12.19061	.40983883	11.43514	12.77339
Mortgage Lending Rate	34	.1296353	.0299368	.0871154	.2128538
Hourly Earnings	34	4.739447	.851938	4.602549	4.939237

Data Sources: TURKSTAT, CBRT quarterly data over 2008:Q1–2016:Q2

Model B: House Price Model

House Price : ln Real REIDIN House Price Index (2010Q1=100)

Hourly Earnings : ln Real Hourly Earning

Mortgage Lending Rate : Annual Real Housing Lending Rate (in percent)

House Sales : ln House Sales

Real Construction Cost Index : ln Real Construction Cost Index

Liquidity Conditions : Money Base (M2)/GDP Ratio

Unemployment : Unemployment Rate (in percent)

Variable	Observations	Mean	Std. Dev.	Min	Max
House Price	37	4.437079	.137237	4.266376	4.683636
Hourly Earnings	36	4.734154	.0856341	4.602549	4.939237
Mortgage Lending Rate	37	.1318659	.0302228	.0871154	.2128538
House Sales	35	12.20286	.4102162	11.43514	12.77339
Construction Cost	36	4.516748	.0506021	4.458895	4.698257
Liquidity Conditions	36	.5268178	.0618266	.3969969	.6367493
Unemployment	36	.1008056	.0161401	.076	.148

Data Sources: TURKSTAT, CBRT, REIDIN, quarterly data over 2007:Q3–2016:Q2

[1] To capture seasonality in the quarterly series, seasonal dummies for Q2, Q3 and Q4 are inserted in the models but only statistically significant dummies are included in the final model specifications.

Annex II. Regulatory Arrangements on the Construction Sector

	Description	Enforcement Date
Macroprudential Measures		
Introduction of the Loan-to-Value (LTV) Ceilings	Caps lending of housing loans to consumers at 75 percent of house value and 50 percent of commercial real estate.	December 2010
Loosening of the Risk Weight on Housing Loans	CAR Risk weight on housing loans was cut from 50 percent to 35 percent	January 2016
Loosening of the Loan-to-Value (LTV) Ceiling	After a long period of no changes in macroprudential standards for mortgage loans since December 2010, The LTV Ratio has been increased from 75 percent to 80 percent.	September 2016
Tax Measures		
Corporate Tax Exemption by Law 5520	Revenues from construction activities abroad are exempted from the Corporate Income Tax of 20 percent.	January 2006
Corporate Income Tax Exemption for Real Estate Investment Trusts (REITs) by Law 5520	Real Estate Investment Trust Funds are exempted from 20 percent Corporate Tax.	January 2006
Abolishment of Financial Intermediation Taxes on Hosuing Loans by Law 5582	Mortgage loans are exempted from Banking and Insurance Transactions Tax (BITT) and Resuorce Utilization Support Fund Levy (RUSF) which were previously at 5 percent and 15 percent of the interest payment.	August 2010
New VAT Arrangement for First House Sales by Government Decree 2012/4116	For those houses with a surface area up to 150 square meters which are located in metropolitan cities and granted with a construction permit before January 1, 2013 , the Law sets VAT at 1 percent for houses whose price lower than TL 500/m2, 8 percent for houses whose price between TL 500-1000/m2 and 18 percent for more expensive house valuations.	January 2013
Reduction of VAT on First House Sales by Government Decree 2016/9153	The government reduced the VAT rate on the sale of new residences with floor area of above 150 square meter from 18 percent to 8 percent. The 8-percent VAT on this segment will be valid till end-Mar 2017. The current 1 percent and 8 percent VAT rates on residences with floor area below 150sqm were unchanged.	September 2016

	Description	Enforcement Date
Other Regulations		
Sales of illegaly occupied so-called 2B Lands to private entities by Law 6292	Treasury's non-forestry lands that were illegally occupied have been allowed to be sold to private entities, increasing supply of sizeable legalized land to developers.	April 2012
Easing Restrictions on Foreigners Real Property Purchases in Turkey by Law 6302	The law has loosened the restrictions on foreigners real property acquisitions by increasing the upper limit of the land that can be sold to foreigners and by expanding the coverage of countries that are eligible to buy real property in Turkey.	May 2012
Launch of a Large-scale Urban Transformation Program by Law 6306	Major incentives, including VAT and other tax exemptions exemptions, rental subsidies etc. have been offered to both households and developers to promote ressettlement and renovation of those buildings that are prone to natural disaster risks.	June 2012
Enforcement of Secondary Regulation on protection of consumers against the risks associated with pre-selling of unbuilt houses by developers	Regulation rules that delivery of the purchased house to the consumers shall not exceed 36 months upon the signature of the pre-selling contract.	November 2014
Introduction of Building Completion Insurance by Law 6502	Given the risks associated with the developer firms possible defaults in meeting their due construction completion commitments under the pre-selling business model, the arrangement aims to provide consumer protection for mortgage-financed house purchases through an insurance scheme. The scheme also enables banks to pre-screen creditworthiness of the mortgaged housing projects of developers in combination with assessment of household creditworthiness.	March 2015
Introduction of government matching contributions for housing related savings by Law 6637	Government is committed to provide matching contributions at 15-20 percent of accumulated savings, capped at TL 15.000 for savings allocated for the first and single house purchases, provided that participants will continue to contribute to the scheme for minimum three years.	August 2016
Introduction of project-based extra incentives for infrastructure projects by Law 6745	A new incentive law enables the government to decide on project-based ad-hoc extra incentives and their extent for individual infrastructure projects that are deemed worth to be supported by the government.	September 2016

	Description	Announcement Date
Planned New Regulations		
Authorities to construct turnkey manufacturing plants for the private sector	The government has annonuced to construct porduction plants on unused government lands for mid-sized manufacturers in exchange of symbolic rents	March 2016
Authorities to launch trading of real estate certificates at the Istanbul Stock Exchange	The government has announced that the legislative arrangements were underway for issuance and trading of real estate certificates at the stock exchange. Reporetdly, the state-run house developer TOKI will pioneer the issuing of real estate certificates. It is expected that the real estate certificates will accelerate the expansion of the construction sector via providing an alternative source of finance and the local capital markets to deepen through attracting more local and foreign investors.	March 2016
Authorities to Introduce new tax measures for Capital Gains on Real Property	Authorities consider to tighten taxation of capital gains at sales both as a result of natural house price increases as well as for price increases induced by infrastructure up-grading or land zonning changes in neighborhoods of metropolitan areas.	April 2016
Authorities to Introduce Golden Visa Issuance to Foreign Real Estate Investors	The arrangement will grand longer residence and work permits for those foreigners who buy real property in Turkey over a certain scale.	May 2016
Authorities to accelarate the works under the nationwide urban regeneration projects	Authorities announced that around 150,000 houses will reportedly be renewed in one year's time without specifying where the projects will be concentrated.	August 2016
Authorities to Issue Real Estate Certificates	Arragement allows the real estate investors to have partial and tradable ownership dividends in various construction projects to deepen financing of real estate projects.	August 2016
Authorities to invest in infrastructure and building construction in the South East of Turkey, which suffered from terrorism events recently	In the context of re-building of terrorism-hit districts in the South Eastern region, the government has announced to invest TL 10bn reportedly in the south-eastern districts Sur, Sirnak, Silopi, Idil, Cizre, Yuksekova and Nusaybin. Reportedly, a total of 36,000 new houses will be built by the state in these provinces and the government will provide families that lost houses due to clashes with rental aid until the conclusion of house projects. The number of houses to be built in the entire region will reportedly amount to 67,000. The government also envisaged the construction of 15 public hospitals in the region, 660 dental care centres, several youth and sport centres.	September 2016

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