



ISRAEL

SELECTED ISSUES

February 2014

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January 24, 2014

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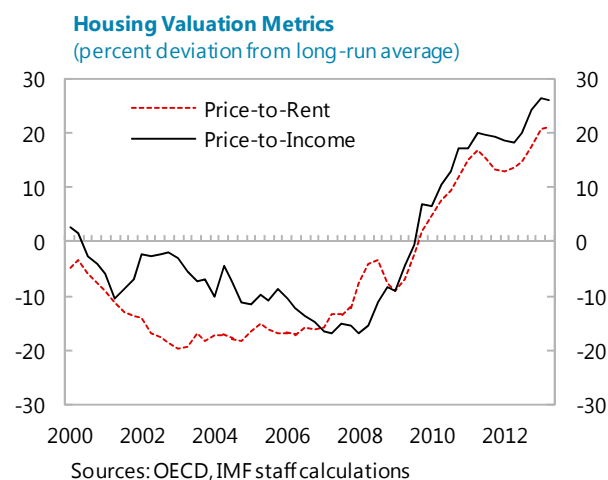
THE HOUSING MARKET IN ISRAEL¹

Property prices in Israel are currently about 25 percent above their equilibrium value, owing largely to low mortgage interest rates and supply shortages. The risk of a sharp correction in house prices, while mitigated by the supply shortages, remains a concern and could have important macro-financial implications. To contain such risks, macroprudential policies should be further tightened. At the same time, concerted efforts should be made to alleviate supply-side constraints.

Developments in the Housing Market

1. Against the backdrop of low interest rates and supply shortages, house price increases have been rampant. Nominal house prices have risen by 80 since 2007. In response to the global financial and Euro Area crises, the Bank of Israel (BoI) engaged in two rounds of monetary easing. The monetary stimulus supported economic growth, but it also boosted demand in the mortgage and housing markets. At the same time, owing to the peculiarities of the housing market in Israel, household formation has tended to outstrip the supply of homes². This phenomenon is largely explained by fast population growth (owing to mass immigration waves during the 20th century), space constraints related to the way the land market operates³, and delays in the land planning approval and building permit issuance processes⁴. As a result, positive demand shocks tend to have large price effects. By contrast, in countries where supply is not constrained, new construction quickly catches up with increased demand, thereby dampening house price movements.

2. Price-to-income and price-to-rent ratios are also well above their equilibrium value. These ratios are, respectively, 26 and 22 percent above their long-run average, suggesting a house price deviation from fundamentals of the same magnitude, as rents and incomes serve as long-run anchors for property prices. In the short run, however, house prices can rise above their equilibrium value, because supply cannot respond quickly to changes in demand. Similarly, increases in the availability of mortgage credit can lead to house price misalignments, owing to feedback loops between these variables, operating through the collateral channel.



¹ Prepared by Carolina Osorio Buitron and Stephanie Denis.

² This phenomenon reflects a stock problem. While household formation continuously outstripped supply in the decade leading to 2008, more recently the construction of new dwellings has kept pace with household growth.

³ Most land in Israel is state-owned and only offered to the public via long-term leases.

⁴ The time elapsed between the moment when the ILA decides to convert land into land for development, and the moment when the building permit is granted is estimated to be 11 years.

Box 1. Cointegration Analysis

House price misalignments in Israel are estimated using an error correction model, which borrows elements from Andrew and Meen (2003), Glaeser, Gyourko and Saiz (2008), and Caldera-Sánchez, and Johansson (2011). The specification of the model is as follows:

$$\Delta rph_t = \beta_0 + \beta_1 \Delta rr_t + \beta_2 \Delta rw_t + \beta_3 \Delta my_t + \alpha ECT_{t-1} + \varepsilon_t$$

Δ is the first difference operator, rph_t denotes real house prices, rr_t the real rental price index, rw_t real wages per employee, and my_t the level of mortgage debt-to-GDP. Further, ECT is the error correction term, which corresponds to the residual of the long-run equation below:

$$rph_t = \gamma_0 + \gamma_1 ps_t + \gamma_2 rr_t + \gamma_3 rw_t + \gamma_4 my_t + ECT_t$$

ps_t denotes the population-to-housing stock variable, which is an indicator of supply-side constraints in the housing market. This variable was not included in the short-run dynamics equation, because it was not statistically significant.

The estimation results are reported in Table 1. All coefficients are statistically significant and have the expected signs. In addition, the error correction terms does not have a unit root, suggesting the existence of a cointegrating relationship between the variables in the long-run equation. This hypothesis was also supported by Johansen's rank cointegration test.

The housing equilibrium value (rph^f) is derived from the long run equation, as follows:

$$rph^f = -17.4 + 1.47 ps^{avg} + 1.11 rr^{avg} + 1.07 rw^{avg} + 0.08 my^{avg}$$

where the superscript 'avg' denotes long-run average (a proxy for the steady state value). Consequently, the misalignment in house prices is given by:

$$m_t = rph_t - rph^f$$

If $m_t > 0$, then house prices are above their equilibrium value. By this metric, house prices in Israel are currently 26 percent above their fundamental value. In addition, the estimates suggest that the speed of adjustment is somewhat slow, with 8 percent of the disequilibrium corrected every quarter. This implies that, other things being equal, the house price misalignment would be corrected in about 4 years.

Table 1. Cointegration Analysis

Short-Run Dynamics	
R-squared	0.29
Adj R-squared	0.23
Δ Real house prices	Coef.
Δ Real rent price	0.52 ***
Δ Real wage per employee	0.23 *
Δ Debt to GDP ratio	0.04 **
ECT (t-1)	-0.08 *
ECT Unit Root Tests	
ADF	-3.28 ** 1/
Trace Statistic (max. rank 1)	39.72 ** 2/
Long-Run Equation	
R-squared	0.79
Adj R-squared	0.77
Real house prices	Coef.
Population-stock ratio	1.47 **
Real rent price	1.11 ***
Real wage per employee	1.07 ***
Debt to GDP	0.08 **
Constant	-17.4 ***

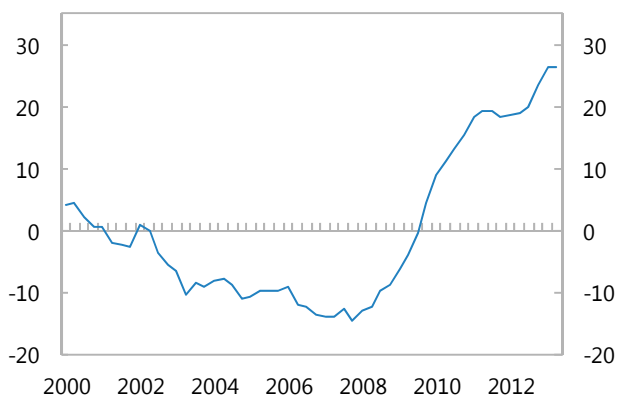
*** p<0.01, ** p<0.05, * p<0.1

1/ The null hypothesis of a unit root process is rejected at the 5% significance level.

2/ The hypothesis of no cointegrating vectors is rejected at the 5% significance level, while the hypothesis of one cointegrating vector cannot be rejected.

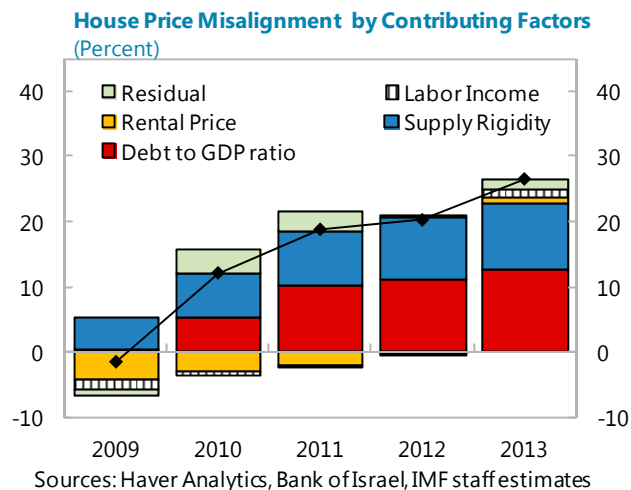
Sources: Haver Analytics, Bank of Israel, and IMF staff estimates

House Price Misalignment (Percent)

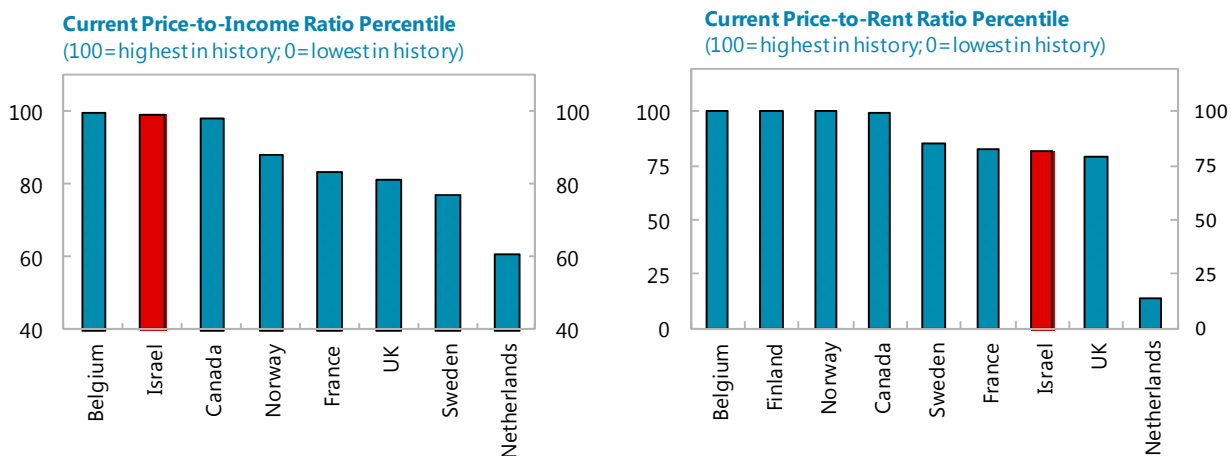


Source: Bank of Israel, IMF staff estimates

3. Increased mortgage availability and supply-side rigidities are equally important drivers of the house price misalignment in Israel. Akin to the standard valuation metrics, cointegration analysis estimates indicate that house prices are about 25 percent above the equilibrium value (see Box1). In addition, around 50 percent of the current house price misalignment is explained by supply-side constraints, while another 50 percent is accounted for by above-average growth in mortgage debt⁵.



4. After taking into account supply-side considerations, price-to-income and price-to-rent ratios suggest that, by international standards, Israeli property prices are considerably elevated relative to their fundamental value. When housing demand is strong, house prices tend to rise faster in the presence of supply constraints. Thus, cross-country comparisons of housing valuations should internalize the effect of supply rigidities. A simple and sufficient way to address this issue is by expressing deviations of the price-to-income and price-to-rent ratios from their long-run average, in percentiles. This metric suggests that house prices in Israel are significantly above their equilibrium value, when compared to other advanced economies and to the country's own history.



Sources: OECD, Bank of Israel, IMF staff calculations

⁵ The contribution of each variable is calculated as the product of the corresponding cointegrating vector coefficient and the variable's deviation from its long-run average (or steady state value).

Risks of a Correction in House Prices and Macroeconomic Consequences

5. With housing in short supply, Israel may be less exposed to a sharp correction in house prices. When the supply elasticity of housing is high, property price upswings are often accompanied by an overshooting in residential construction. In turn, during the downswing, the units overbuilt throughout the boom put additional downward pressure on prices.⁶ By contrast, in supply-constrained economies, household formation tends to outstrip the supply of houses continuously, raising structural affordability concerns. For this reason, in these countries property prices tend not to revert to their historical mean, relative to incomes; and house price corrections tend to be shorter and faster (see Table 2)⁷.

6. Nevertheless, cross-country empirical analysis suggests that the risk of a housing downturn in Israel cannot be ignored. The probability of a housing bust within the next 5 years was estimated with a panel probit model. The outcome variable is a dummy that takes the value of 1 if real house prices fall by at least 10 percent within a five year window preceding the bust. The controls include variables which, as documented in the literature, are good predictors for house price adjustments: the current account balance, inflation, and residential investment-to-GDP and mortgage debt-to-GDP ratios.

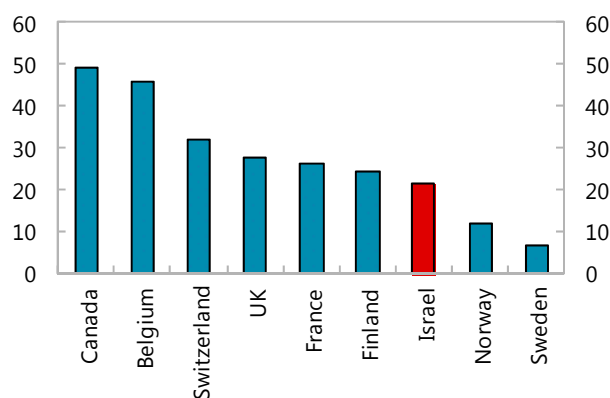
Table 2. House Price Cycles in Advanced Economies

	Upturns		Downturns	
	Duration (quarters)	Amplitude (percent)	Duration (quarters)	Amplitude (percent)
Supply constrained				
Real house prices	59	80.4	22	-27.2
Price-to-Income ratio	47	51.4	18	-29.6
Price-to-Rent ratio	60	67.8	23	-34.7
Not supply constrained				
Real house prices	41	61.1	32	-36.0
Price-to-Income ratio	27	36.0	34	-34.6
Price-to-Rent ratio	33	49.5	35	-42.7

Sources: OECD; and IMF staff calculations.

Notes: Amplitude is the average change in real house prices from trough-to-peak in upturns and from peak-to-trough in downturns. Supply constrained countries are Belgium, Israel, Italy, Netherlands, Switzerland and the UK. Countries that are not supply constrained are Canada, Germany, Denmark, Finland, France, Ireland, Japan, Norway, Sweden and the US.

Probability of Real House Prices Falling at Least 10% over the Next 5 Years (Percent)



Sources: OECD, Haver Analytics, Bank of Israel, IMF staff estimates

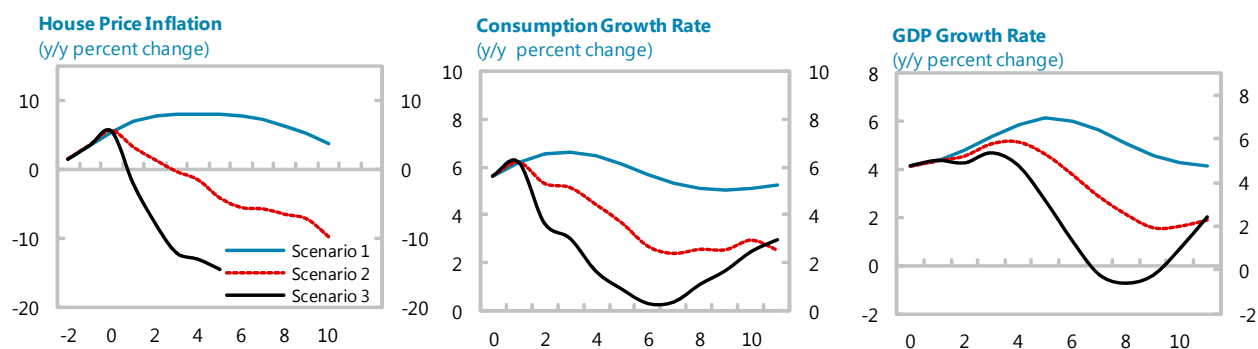
⁶ The swing in residential investment further contributes to the boom-bust cycle. In the United States, residential investment contributed about 0.5 percentage points annually during the boom years, but subtracted, on average, 0.9 percent annually during the subsequent bust.

⁷ The group of "supply-constrained" countries was selected using three criteria: above average population density, above average duration in the process of building permit issuance, and long-run supply elasticity estimates below 0.7. The latter were taken from Caldera Sánchez, A. and Å. Johansson (2011).

- **The probability of a housing bust in Israel is about 20 percent.** The factor contributing most to the likelihood of a downturn is the mortgage-to-GDP ratio, which has risen by 10 percentage points since 2007. However, due to the severity of supply-side constraints, the ratio of residential investment-to-GDP is low, which reduces the probability of an adjustment.

7. A house price correction in Israel could have important consequences for the real economy. Estimates from a VAR model for Israel suggest that a housing bust could hurt economic growth by weakening private consumption⁸: a one-standard deviation shock to real house prices –a 6.5 percentage point decline in annual house price inflation– would reduce consumption growth by 1.5 percentage points in the short-run and by nearly 3 percentage points over the long-run. To assess the impact of plausible future house price developments on the real economy, three alternative scenarios were considered: 1) a stable path, where prices adjust slowly to their equilibrium value; 2) a sharp and slow correction in house prices, akin to the adjustment that recently took place in the Netherlands; and 3) a sharp and quick fall in residential real estate prices, similar to the Israeli experience of the late 80's⁹.

8. The macroeconomic effects of a correction in house prices depend on the speed of adjustment. A slow correction would allow the economy to escape a recessionary episode, but economic prospects would be weak for a prolonged period of time. By contrast, a rapid adjustment would lead the economy into recession, with consumption and output recovering two years after the shock.



Sources: Haver Analytics, Bank of Israel, Israel's Central Bureau of Statistics, and IMF staff estimates.

⁸ These results rely on estimates from a VAR model, which includes annual growth rates of real private consumption, real GDP and lagged real house prices, as well as the real policy rate.

⁹ These forecasts are based on the VAR estimates, and were obtained using the Gauss-Seidel solution technique.

Box 2. Macroprudential Policy in Israel

While tightening monetary policy

- August 2009: to reduce potential default losses in response to interest rate increases, banks were required to tighten their risk management, scrutinize the mortgage loans to households, and enhance disclosure, particularly with respect to loans carrying floating interest rates that were extended to households.
- March 2010: to reflect better the true risk inherent in bank business models, a new treatment was required for loans taken out by a “purchasing group”—individuals who organize themselves for the joint purchase of land rights, in part, to get tax benefits. Loans extended to purchasing groups were required to be classified as “construction and real estate” credit, which embed a higher risk.
- July 2010: To increase banks’ loss absorption capacity in the event of a housing crisis or an economic downturn, supplemental reserve requirements of 0.75 percent were instituted for all outstanding mortgages with a Loan-to-Value ratio (LTV) that exceeds 60 percent.
- October 2010: to further improve banks’ loss absorption capacity and reduce the supply of risky mortgages, a capital surcharge was imposed on high-risk housing loans. The risk-weight factor for mortgages with a floating component of over 25 percent, an LTV of at least 60 percent, and a mortgage value higher than NIS 800,000 was raised from 35 to 100 percent.
- May 2011: to reduce the probability of mortgage default in the event of an interest rate increase, the variable component of mortgages was capped at 1/3 of the principal amount of the loan, for mortgages with an adjustable rate period of less than 5 years. In addition, banks were asked to notify customers whose mortgage loans carry a floating interest rate component that applies to one-third or more of their loan.

While loosening monetary policy

- July 2012: a 100 percent capital surcharge was imposed on groups of borrowers, who buy new built residential properties collectively, and who also engage with third parties to execute the construction and development of residential projects.
- November 2012: LTVs for housing loans were capped at 70 percent—excluding first-time buyers, for whom a maximum LTV of 75 percent was imposed. In addition, the LTV for mortgage loans for investment purposes was capped at 50 percent.
- February 2013: To restrict the supply of mortgages, capital requirements and provisioning for mortgages was tightened. For loans with an LTV between 45 and 60 percent capital risk weights were raised from 35 percent to 50 percent. For loans with an LTV above 60 percent, the risk weight was raised to 75 percent. The allowance for credit losses from housing loans was raised—such that the ratio between the group allowance and the balance of housing loans is at least 0.35 percent.
- August 2013: To restrict the supply of risky mortgages the debt-to-income ratio (DSI) of new loans was capped at 50 percent; capital surcharges were imposed on mortgages with DSI between 40-50 percent; the maximum repayment period was set to 30 years; and the floating component of mortgages was capped at two-third of the loan. This applies to all mortgages with an adjustable rate component, and comes in addition to the limitation imposed in May 2011.

Role of Policies

9. The BoI has used monetary policy to support the real economy and macroprudential policies to alleviate housing sector related risks.

- At the height of the global financial crisis, the Bank of Israel cut the policy rate assertively, allowing the economy to recover quickly. As the economy and the housing market picked up, and inflationary pressures emerged, the BOI started to raise interest rates gradually, while tighter macroprudential measures were introduced to counteract the buoyant housing market (see Box 2).
- By the second half of 2011, global economic conditions became volatile, domestic economic growth slowed, and inflationary pressures receded. Notwithstanding these macroeconomic developments, house prices continued to rise fast. Consequently, the BoI began to lower the policy rate to support economic activity, and tightened its macroprudential policy stance in the pursuit of financial stability (see Box 2).

10. Macroprudential policies have until recently focused on indirect measures to restrain the buoyant mortgage and housing markets. Since late 2009, the BOI introduced supplementary provisioning and capital surcharges for mortgages (*indirect measures*), as well as restrictions to the adjustable rate component. More recently, *direct measures*, such as limits on loan-to-value and debt service-to-income, have been put in place for new housing loans.

11. While macroprudential policies have contributed to buttress the resilience of the financial system, their impact on mortgage and housing market activity has been narrower (see Box 3).

- Macro-prudential measures appear to have had an effect only over the six-month period following the intervention. Within this time horizon, direct measures have been more effective than indirect ones¹⁰. That is, restrictions on the size and risk of mortgages have been more successful than measures aimed at weakening banks' incentives to lend.
- In the housing market, macroprudential policies have reduced somewhat the level of transactions, but there is no evidence that they have contributed to curb house price inflation. These results suggest that macroprudential policies may be helping to restrain speculative incentives. Intuitively, positive co-movements between house price inflation and the level of transactions signal the existence of speculative behavior, by indicating that market participants bargain over house price growth rather than property price levels (see Box 4). Although this result should be taken with caution, as the turnover data corresponds only to new built homes

¹⁰ The latest changes to macroprudential regulation were instituted in August 2013. This exercise is based on a monthly sample spanning from January 2004 to August 2013. Hence, by construction, it is not yet possible to assess the impact of the latest measures.

(which represent about 20 percent of the market), the finding is consistent with the evidence that tighter macroprudential policies have contributed to reduce the share of transactions undertaken by investors.

- The evidence also suggests that the origination of new housing loans has decelerated after the introduction of direct measures, while the impact on mortgage debt levels has not been significant. This may be partly explained by the slow-moving nature of the latter variable, which is a stock. More importantly, direct measures have not been given sufficient time to play out to assess their effectiveness, but early evidence is somewhat promising.

Box 3. Assessing the Effectiveness of Macroprudential Policies

Following the approach proposed by Igan and Kan (2011), the effects of macroprudential regulation on house price dynamics, real estate activity and household leverage were examined by estimating the following equation

$$V_t = \alpha + \beta' X(L)_t + \gamma_d D_t^d + \gamma_i D_t^i + \varepsilon_t$$

where V_t denotes the variable of interest: house price inflation, turnover in the real estate market—expressed in terms of deviations from the long run average, the percent of transactions undertaken for investment purposes, and the growth rates of new mortgage originations and household mortgage debt.

To focus solely on the role of financial policies, changes to the monetary policy stance were controlled for by introducing a vector of controls, X_t . This vector includes indicators of economic activity and monetary conditions, such as the short-term interest rate, the mortgage spread, and the exchange rate. D_t^d and D_t^i are dummy variables that take the value of 1 in the months following the introduction of direct and indirect macroprudential measures, respectively. To assess the horizon over which financial policies have had an effect, the dummies were constructed for three and six-month windows. The results of the estimations are reported in Table 3 below.

Table 3: Effects of Macro-prudential Policies on Housing and Mortgage Market Activity
(y/y percent change unless otherwise stated)

	House Price Inflation	Turnover (demeaned)	Change in Investor Share	New Housing Loans	Mortgage Debt
Direct Measures					
3 months after	-0.07	-0.06	-0.21 **	-4.36	-0.01
6 months after	-0.13	-0.12 *	-0.12 *	-5.05 *	0.04
Indirect Measures					
3 months after	0.03	-0.06	-0.02	0.66	0.09
6 months after	0.07	0.04	-0.09 *	5.03 *	0.13
2009-2012 average	11.1	2.1	0.0	16.0	12.3

*, **, and *** denote significance at the 10, 5 and 10 percent level, respectively.

Sources: Haver Analytics, Bank of Israel, and IMF staff estimates.

Box 4. Deriving the Irrational Exuberance Component of House Price Inflation

A well-known pattern in housing markets is that prices changes and trading volumes, measured as the ratio of housing sales to stock (turnover), correlate with each other: relative to a falling market, trading activity is more intense when prices are rising. In Israel, the contemporaneous correlation between these variables in the market for new built homes is quite high (90 percent). This phenomenon can be explained by equity constraints and nominal loss aversion, or search frictions (see Poterba, 1984).

Peterson (2012) builds a theoretical model with search frictions in the housing market. He also develops an econometric approach to assess whether, in the presence of these frictions, house prices are driven by irrational exuberance.

The intuition underlying Peterson's theory is that search frictions (or equity constraints) can cause prices to deviate from fundamentals due to demand being temporarily high (low), even though there has been no change to the underlying fundamentals. Since agents believe that the housing market is efficient, they think the prices of recent transactions reflect the fundamental value of houses. Therefore, buyers and sellers bargain over recent prices, or house price growth, rather than the level of property prices. To test this theory, Peterson formulates two models: one assumes that agents behave rationally (equation 1), and the other corresponds to a framework of irrational behavior (equation 2).

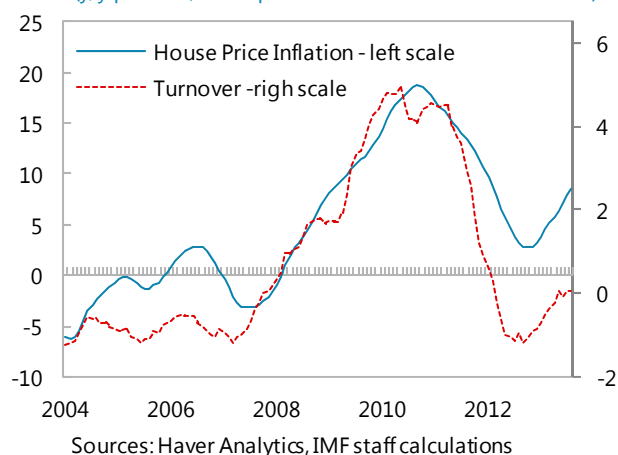
$$\Delta ph_t = \alpha + \beta(\phi_t - \phi_{t-4}) + \varepsilon_t \quad (1)$$

$$\Delta ph_t = \gamma + \psi\phi_t + \varepsilon_t \quad (2)$$

Δph_t represents the annual growth rate of house prices, and ϕ_t denotes deviations from the long-run average of housing turnover.

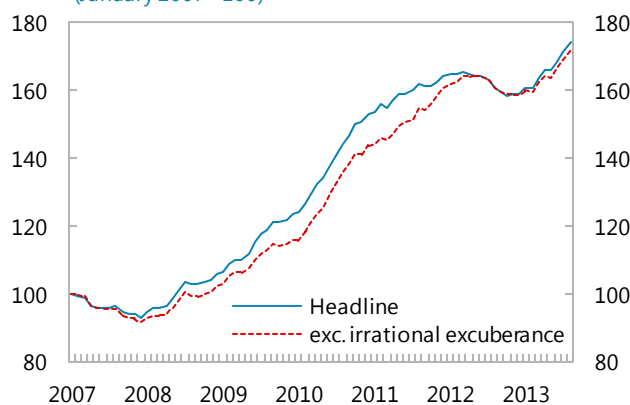
Akin to what Peterson (2012) finds for the U.S., the results for Israel indicate that the rational model cannot explain house price growth, whereas the irrational exuberance model has a rather good fit. The estimates of the irrational model can be used to estimate a counterfactual that extracts the "irrational exuberance" component from house price developments. The chart to the right shows that when house prices started to accelerate in 2008, the role played by agents' expectations was important. More recently, however, the speculative component of house price has become negligible.

Housing Market: Inflation and Trade
(y/y percent, 12ma percent deviation from mean 12ma)



Sources: Haver Analytics, IMF staff calculations

House Prices
(January 2007=100)



Sources: Haver Analytics, IMF staff estimates

Concluding Remarks and Policy Considerations

12. The analysis showed that house prices in Israel are well above their equilibrium value.

The results from a cointegration model, as well as standard valuation metrics, suggest that house prices in Israel are about 25 percent higher than medium term fundamentals would suggest. This house price misalignment is largely explained by an increase in the availability of mortgage credit and supply-side rigidities. Furthermore, even after taking account of these supply-side considerations, by international standards house prices in Israel appear to be significantly elevated relative to their equilibrium value.

13. The scope for a correction in house prices is significant and could have important macroeconomic implications. Cross-country analysis suggests that the risk of a moderate to sharp correction in house price in Israel is around 20 percent. The factor contributing most to the likelihood such outcome is the mortgage debt-to-GDP ratio, which has increased rapidly over the past 5 years. By contrast, the relatively low level of construction has contributed to contain the probability of a housing downturn. If house prices drop sharply, economic growth would be undermined through weaker consumption.

14. The BoI has sought to balance growth concerns against the risks of macroeconomic imbalances in the housing market. Since 2008, the Bank has maintained an easing bias to support growth, notably in the tradable sector, which has been adversely impacted by the appreciation of the exchange rate (see External Competitiveness Annex). At the same time, macroprudential measures have been used to cool the housing market. Direct macroprudential policies, such as loan-to-value and debt service-to-income restrictions, have been more effective than measures aimed at weakening banks incentives to lend. Moreover, these policies have contributed to reduce financial stability risks and the volume of transactions in the housing market, although their impact so far in alleviating house price inflation has been more limited. If given more time to play out, such measures are expected to have a greater bearing in reducing risks of boom-bust dynamics in the housing market.

15. Additional house price increases would require assertive policy responses. If house prices continue to rise, direct macroprudential policies should be further tightened to curb mortgage lending and contain financial stability risks. In addition, to further reduce demand for housing, notably for speculative purposes, the property purchase tax for non-primary residencies could be increased. Finally, concerted efforts across the relevant agencies are needed to alleviate supply-side constraints and ensure a durable moderation of house price inflation.

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FISCAL RULES IN ISRAEL¹

This annex provides an assessment of the fiscal rules currently in place in Israel.² We argue that reasons for the historic weak compliance with the rules include: the absence of a medium-term budget framework; a loose link between the ultimate objective of the rules and the operational targets; insufficient flexibility of the rules in the face of shocks; and weak enforcement. Measures to improve the current arrangements could include: establishing a medium-term budget framework; strengthening the link between the objective and the immediate target; introducing some flexibility to account for shocks in the rule design; and establishing an independent body to monitor compliance.

Current fiscal rules arrangements in Israel

1. Fiscal policy in Israel is regulated by a budget rule and an expenditure rule, with the purported goal being to reduce public debt. The Deficit Reduction Law (DRL) in 1991 established a budget rule under which the Government sets multiannual targets for the *deficit* of the central government. In 2004, the DRL was amended to include an *expenditure* rule, which initially limited central government expenditure to one per cent real growth. Causing a reduction in general government expenditure (from 50 to 40.3 percent of GDP between 2002 and 2012) to levels well below the OECD average of 47 percent, the ceiling was revised in 2010 with a new rule setting real expenditure growth as a function of the deviation of public debt from 60 percent of GDP and of the average GDP growth rate over the past ten years. When the two targets conflict, the most restrictive of the two applies.³

2. Deficit targets have been missed and reset on several occasions. Over the last twenty years, targets were revised about fifteen times (Table 1 and Figure 1). In addition to revisions to the level of the targeted deficit, the targeted aggregate was also modified and changed from domestic deficit to overall deficit (domestic and external) in 1996, and to exclude the BOI's profits in 1999. Targets were also often missed largely owing to growth shocks, which caused revenue shortfalls.

3. The expenditure ceiling has been adjusted several times. Set initially to 1 percent, the expenditure ceiling was modified to 1.7 percent in 2007 (excluding war-related and disengagement transitory expenditure) to better reflect population growth and then to 3 percent in 2009. The ceiling was also modified by the Knesset every year from 2005 to 2010 to allow for higher spending due to unforeseen events (like disengagement from Gaza in 2005–08; the second Lebanon War in 2006–07; and the global financial crisis 2008–09). An important factor for difficulties in complying with the ceiling is that the budget has been conducted on an annual and, since 2009 biennial basis, while medium-term expenditure strategies of line ministries are conducted on a horizon of 3 to 5 years. As

¹ Prepared by Elva Bova.

² The study draws in part on previous work on the topic: IMF (2011), IMF (2008), Debrun and others (2008a).

³ For a detailed discussion on the expenditure rule see Brender (2012).

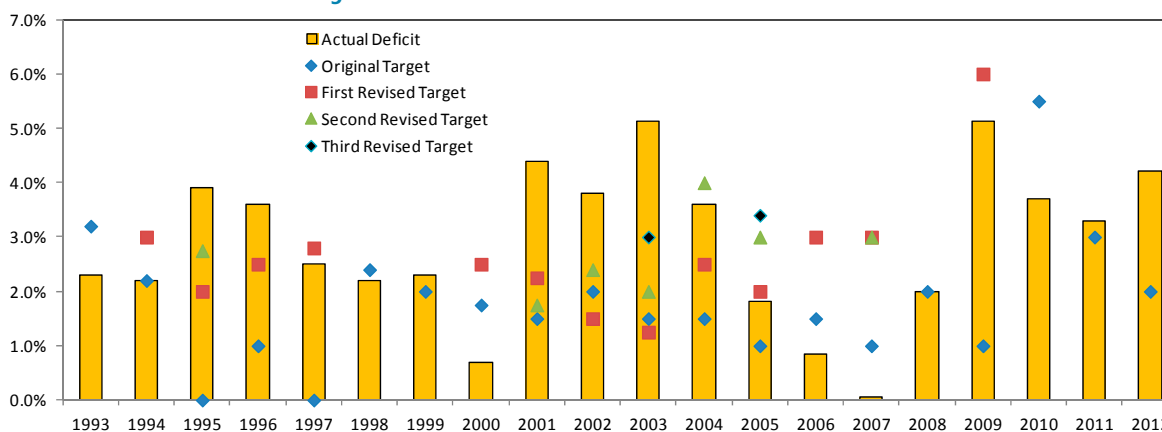
a consequence, in recent years many policy decisions have increased expenditure over the medium-term, creating commitments which are not consistent with the deficit targets and expenditure ceiling. Also, the general practice is that deficit targets are modified soon after the elections; and almost every government sets multi-year deficit targets, with implied sharp declines in the future, while setting higher deficit targets for the current year (BOI 2013).

Table 1: Revisions of Deficit Targets

		Israeli Central Government Deficit Targets, by year established														
Actual Deficit		1991	1993	1995	1996	1999	2000	2001	2002	2003	2004	2006	2008	2009	2012	2013
1992	4.8	6.2														
1993	2.3	3.2														
1994	1.9	2.2	3													
1995	3.1	0		2.75												
1996	4.4			2.5												
1997	2.7				2.8											
1998	3.1				2.4											
1999	3.2				2											
2000	0.6				1.75	2.5										
2001	4.1				1.5	2.25	1.75									
2002	3.5					2	1.5	3								
2003	5.1					1.5	1.25	2	3							
2004	3.6							1.5	2.5	4						
2005	1.8							1	2	3	3.4					
2006	0.9								1.5	3						
2007	0.1								1	3		3				
2008	2.0									3		3	1.6			
2009	5.1									3		1	1	6		
2010	3.7									3		1	1	5.5		
2011	3.3									3		1	1	3		
2012	4.2									3		1	1	2		
2013										3		1	1	1.5	3	4.65

Source: Bank of Israel's data

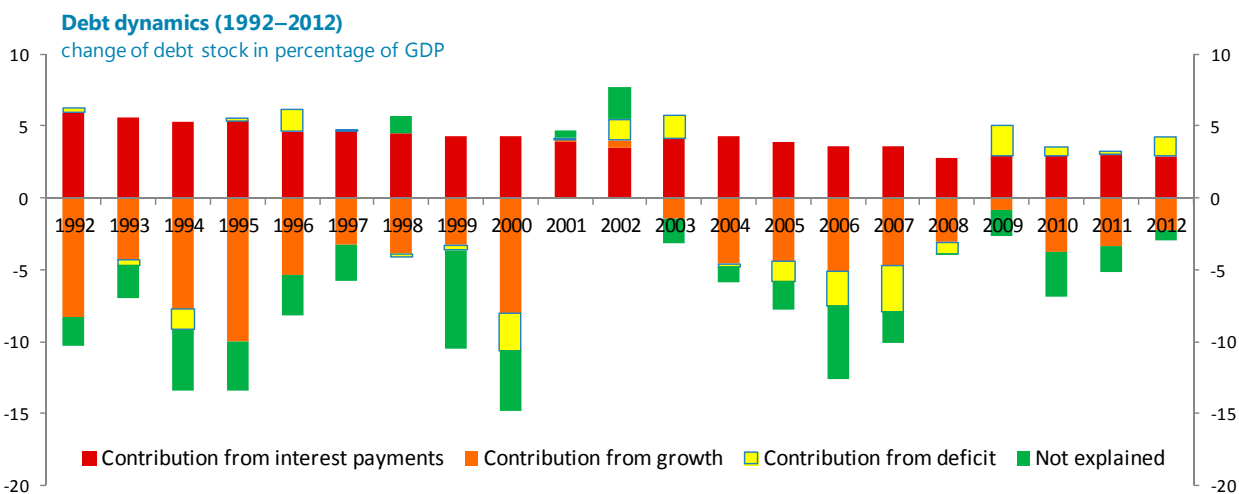
Actual Deficits vs. Deficit Targets



Sources: Brender (2011), Bank of Israel Reports

4. In spite of the weak compliance with the rules, debt as a share of GDP declined substantially over the last twenty years. Since the early 1990s debt decreased from almost 140 percent of GDP to below 70 percent in 2012. This debt reduction was mostly due to high growth (figure 2) and partly to large privatizations (Fisher and Flug, 2007). Only between 2004 and 2008 deficit reductions played a role for debt reduction, reflecting the consolidation efforts taken

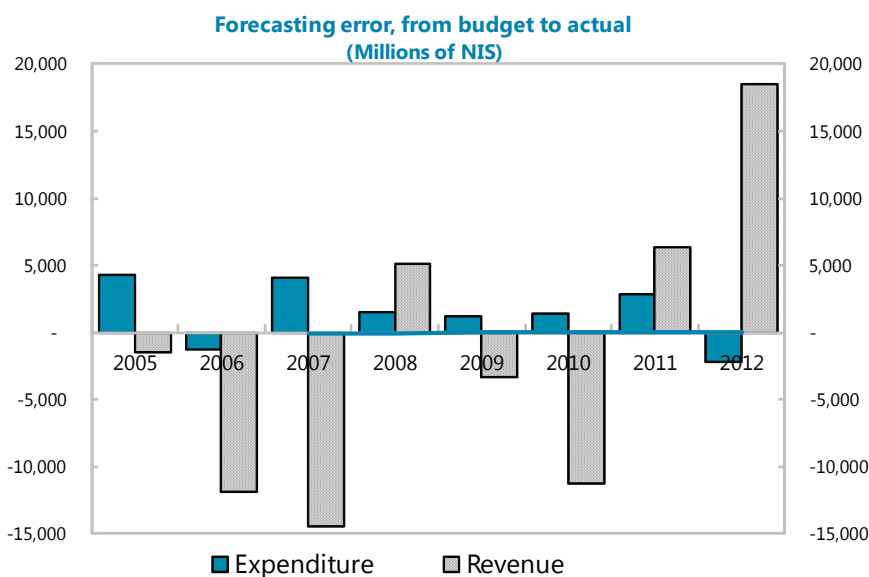
between 2003 and 2007 which led to a sharp contraction in debt to GDP. Despite this declining trend, debt ratios remain high in Israel and interest payments are among the highest in the OECD countries (4 percent of GDP). Moreover, with inflation at relatively low levels and economic growth expected to be stable but moderate over the medium-term, further progress on reducing debt will need to come from maintaining low deficits.



Assessment and diagnostic

5. Generally, the literature identifies several possible reasons for weak compliance with fiscal rules: (i) weak medium-term budgeting and forecasting, such as unrealistic medium-term targets or systematically biased forecasts; (ii) a lack of clarity in the fiscal framework; (iii) an overly rigid design of the fiscal rules; (iv) and, weak enforcement and lack of political will.

Medium-term budgeting and forecasting



6. Short-term budgetary forecasts in Israel tend to be conservative and unbiased.

Preliminary evidence on the biannual budget forecasts and actual realization for fiscal aggregates and GDP suggests that the authorities adopt a conservative approach. GDP has been better than forecast in 2007 and 2008, but lower than budgeted in the following years; hence no systematic bias is apparent. Revenue forecasts have been mostly pessimistic, while expenditure has been lower than forecast in most years (figure 3).

7. However, a key weakness remains the lack of a medium-term budget framework.

The budget is conducted on a biennial basis and the Ministry of Finance produces and publishes forecasts for the macro economy and for the public finances for only three years ahead, but the spending envelope is binding only for the first two years.⁴ This is a relatively shorter time horizon than in most OECD economies, where budgets and forecasts typically have a time horizon of about 3 to 5 years. On the other hand, Line ministries in Israel tend to produce medium term strategy documents, approved by the Government and the Knesset, with expenditure commitments which are not consistent with the expenditure ceiling and deficit targets, creating mismatches and causing the breaching of the fiscal rules in subsequent years.

8. Accuracy and a lack of bias in forecasting become more important in a medium-term framework.

To improve forecasting, some countries have recently established independent bodies, known as fiscal councils, to assess the government's forecasts or in some cases produce their own forecasts. This is discussed further in the following chapter.

Does the arrangement set a proper and clear link with the main objective of fiscal policy?

9. A fiscal rule is a permanent constraint on fiscal policy, resilient to economic and political pressures.

An arrangement for the rule usually delineates a numerical target over a long lasting time period and specifies operational fiscal indicators that can be used to attain the target (IMF 2009). As such a rule should provide operational guidance to policy makers by establishing a link between targets that are under the control of the government and the ultimate objective of fiscal policy. To this end, the ultimate objective should be clearly specified by the law together with a time frame to attain the target. In this context, several countries have adopted fiscal responsibility laws with explicit numerical targets and associated operational rules (for instance in the late 1990s New Zealand, the UK, Australia).

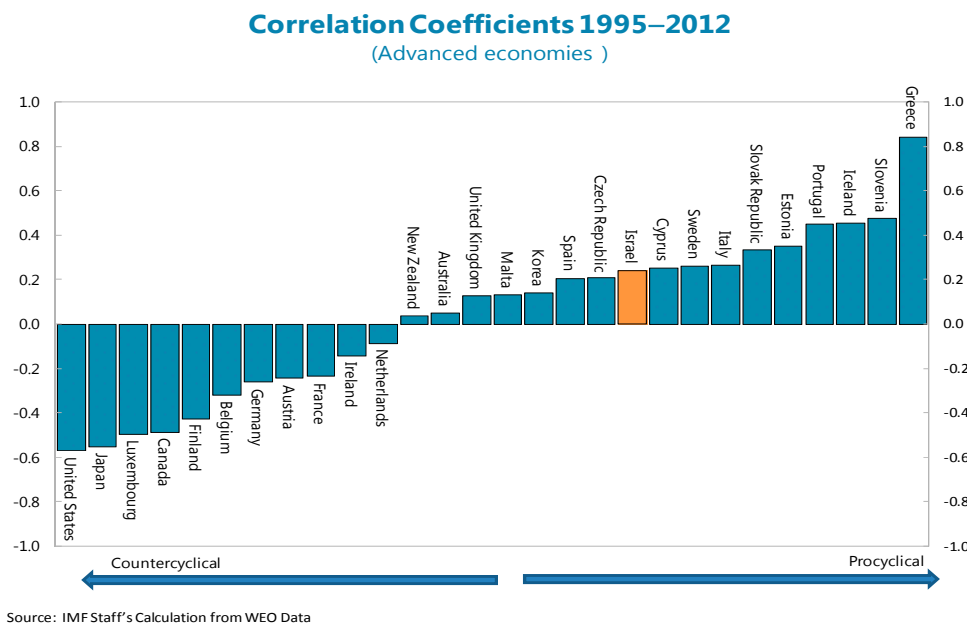
10. A proper link with the fiscal policy objective is missing. *The deficit target* in Israel does not meet this definition of a fiscal rule, as the current practice of setting deficit targets does not entail a permanent constraint on fiscal policy. Although the objective of debt-reduction is an aim of Israel's fiscal policy, the laws setting the targets do not explicitly indicate that these targets are anchored to a specific debt level; while an indication of this type would provide a firmer signaling to the market. Conversely, the *expenditure ceiling* takes into consideration a level of debt to GDP of

⁴ For a detailed review of medium term forecast in Israel see IMF (2011).

60 percent but does not explicitly indicate that this is a target or stipulate when this debt level should be attained. With the formula incorporating the average of last ten years of GDP growth, expenditure growth could still be relatively rapid even at high levels of debt. Moreover, the path of debt depends on the growth rate of revenue as well as expenditure.

Are the rules designed in a way that allows flexibility in case of shocks or over the cycle?

11. Fiscal policy in Israel is procyclical. The design of fiscal rules should allow flexibility in the case of shocks and over the cycle. By narrowing the scope for discretionary action, fiscal rules may otherwise tend to limit the ability of fiscal authorities to react to business cycle fluctuations, thus potentially exacerbating volatility.⁵ Looking at simple correlation coefficients between the cyclical components of real spending and real GDP for advanced economies for the period 1995–2012, it emerges that in Israel fiscal policy is pro-cyclical (figure 4).⁶ A reason for this is that the deficit target rule amplifies pro-cyclical responses to shocks, since in periods of recession, when tax revenues decline and the deficit increases, sticking to the deficit target rule requires raising taxes or cutting expenditures, which would further moderate economic activity, while during booms, the rule enables a reduction in the tax rates.



⁵ For the empirical literature on procyclicality and fiscal rules see Fatàs and Mihov (2004), Levinson (1998), and Debrun and others (2008b).

⁶ A positive correlation coefficient indicates that government spending is procyclical, while a negative correlation coefficient indicates that it is countercyclical. In Israel the coefficient is procyclical and amounts to 0.28, while in most G8 countries it is negative, hence countercyclical. For the estimation of correlation coefficients we followed the technique by Frankel and others (2011).

12. To avoid pro-cyclicality and allow immediate responses to shocks, second generation fiscal rules have included more flexibility in the rule design. As expressed in Schaechter et al. (2012), the financial crisis of 2008–09 triggered a series of adjustment, suspensions and relaxations of fiscal rules, which complicated the design but warranted quick adjustment in case of shocks. Broadly speaking, rules can allow for some flexibility by:

- **Flexibility in the targets.** To allow for flexibility over the cycle, budget rules can be specified as structural or cyclically-adjusted balances, which identify the balance that would prevail in economic conditions that reflect the fundamentals, i.e. netting out one-off events (such as bubbles, commodity shocks) for the structural balance, and cyclical fluctuations in the case of the cyclically-adjusted balance. In both cases, the estimation of the *true* position of the economy, in particular distinguishing between cyclical and underlying elements, might be difficult. In addition, targets can be specified on a medium-term basis allowing for flexibility in the face of near-term shocks as long as a medium-term path consistent with achieving the rules is maintained.
- **Escape clauses are specific dispositions included in the law establishing the rule that indicate when the rule can be relaxed.** Best practice suggests that the criteria for triggering the escape clause should be restricted to extraordinary factors, which normally range from natural disasters, economic recessions to banking bailouts (table 2). Then, the conditions for triggering the clause should be linked to measurable criteria, like declines in GDP or revenues. The activation of the clause requires broad political and public support, like a large parliamentary majority or independent validation. Also, the law or provision on the escape clause should include the maximum number of years during which the rule is suspended, and should specify the path back to the rules (Schaechter et al. 2012).

Table 2. Fiscal Rules with Escape Clauses

Country and Date	Natural disaster	Economic recession	Banking system bailout, guarantee schemes	Change in Government	Change in budget coverage	Other events outside govt. control	Voting mechanism defined	Transition path defined
Brazil (since 2000)	X	X	-	-	-	-	X	-
Colombia (since 2011)	-	X	-	-	-	X	-	-
Germany (since 2010)	X	X	-	-	-	X	X	X
Jamaica (since 2010)	X	X	-	-	-	X	-	-
Mauritius (since 2008)	X	X	-	-	-	X	-	-
Mexico (since 2006)	-	X	-	-	-	-	-	-
Panama (since 2008)	X	X	-	-	-	X	-	X
Peru (since 2000)	X	X	-	-	-	X	-	X
Romania (since 2010)	-	X	-	X	X	X	-	X
Slovakia (since 2012)	X	X	X	-	-	X	-	-
Spain (since 2002)	X	X	-	-	-	X	X	X
Switzerland (since 2003)	X	X	-	-	-	X	X	X
EU member states/ euro area (since 2005)	-	X	-	-	-	-	-	X
WAEMU (since 2000)	-	X	-	-	-	-	-	-

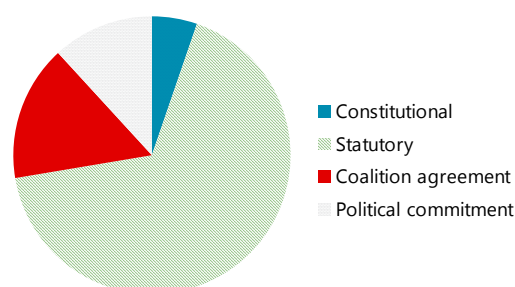
Source: National authorities; and IMF staff assessment from Schaechter et al. 2012.

Does the institutional setting sustain the enforcement of the rule?

13. To enhance enforcement, the institutional setting is key. The mere introduction of fiscal rules does not guarantee success (IMF 2009). Evidence suggests that rules that do not have effective enforcement mechanisms tend to fare worse than rules that do and are more likely to be abandoned or reversed (Debrun and others, 2008b). Yet, in practice an effective enforcement based on sanctions is unrealistic and non feasible for national fiscal rules, since it requires an effective third-party enforcer. To enhance enforcement, however, rules can be supported by legal and institutional frameworks.

- **On the legal front**, while most countries adopt rules through statutory laws (figure 5), France, Germany, Poland and Switzerland⁷ have raised the fiscal rule law to the constitutional level, making it extremely binding, helping prevent the submission or adoption of a budget at odds with the prescription of the rule (Debrun and others, 2008b).

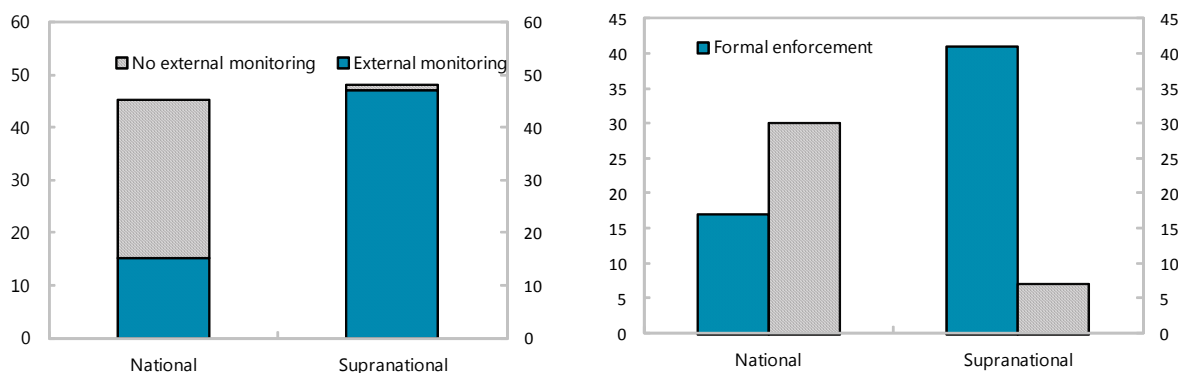
Legal Enforcement: National fiscal rules



Source: National authorities; and IMF staff assessment from Schaechter et al. 2012.

- **On the institutional front**, many countries have established independent monitoring bodies such as the fiscal councils discussed in Chapter III; and/or have adopted formal enforcement procedures (figure 6). Such procedures can range from obligations to publicly explain the deviation, or the obligation to take corrective action, such as the adjustment of certain expenditure or tax parameters. To this end, some countries have incorporated an autocorrection mechanism in the fiscal rule arrangement which roll-over any deviations from the achievement of fiscal targets to subsequent years.⁸

Institutional Enforcement



Source: National authorities; and IMF staff assessment from Schaechter et al. 2012.

⁷ Constitutional laws were set for the revenue rule in France, the budget balance rule in Germany and Switzerland and the debt rule in Poland.

⁸ For more information on automatic correction mechanisms see Schaechter and others (2012).

14. Israel's fiscal rules are set by statutory laws, with no formal enforcement procedure nor external or internal monitoring body, although a sort of auto corrective mechanism is embodied in the expenditure rule.⁹ At present, the government decides on medium-term programs for years beyond the current annual or biennial budget with no formal (or practical) obligation to examine them against the expenditure ceiling or the medium-term deficit targets. In addition, the legislative body can approve new expenditure programs without due consideration to the overall budget framework. Moreover there is no formal external monitoring of progress against the fiscal rules. While the Bank of Israel produces high-quality independent analysis of the fiscal position it does not have a clear and explicit mandate in this area and an expanded remit would risk creating a conflict of interest with its core role on monetary policy. This is discussed further in the following chapter.

Recommendations: a road map

15. To strengthen fiscal institutions in place, priority should be given to setting a medium-term budget framework. Subsequently, the current design of the rules should be strengthened, and finally, enforcement should be boosted.

- **Developing a medium-term budget framework.** The authorities should develop a comprehensive medium-term fiscal and expenditure framework by:
 - (i) ***developing and publishing in the annual budget medium-term macroeconomic and fiscal forecasts*** for the budget years plus two or three additional years, and providing an analysis of the risks around these forecasts. This will enhance the credibility of the budget by showing how the medium-term aggregate expenditure ceiling and revenue projections (including announced policy changes) are consistent with meeting the government's medium-term debt and deficit targets;
 - (ii) ***initially agreeing on broad spending priorities*** to guide the allocation of spending within the aggregate ceiling, and over time establishing a process for setting medium-term ceilings for individual line ministries that are consistent with the aggregate ceiling. This will increase fiscal discipline by ensuring that ministry spending commitments are consistent with the overall ceiling over the medium-term, and should improve efficiency by allowing ministries to more effectively plan expenditure;
 - (iv) ***setting up a mechanism and capacity for monitoring medium term spending*** plans and execution to ensure that the expenditure ceilings are not breached. This will improve fiscal discipline and enhance the credibility of the budget plans;

⁹ The expenditure ceiling formula incorporates a sort of automatic correction mechanism through two adjustments. First, any deviation from the expenditure ceiling at time t-1 will be corrected at time t, since real expenditure growth is calculated with respect to the previous budgeted level and *not realization* of expenditure. Second, higher expenditure than planned would entail higher debt at time t and this would lower the coefficient for expenditure growth at time t.

- **Modifying the design of the rules by:**
 - (i) ***clearly specifying their objective.*** Having a clearly-defined ceiling on public debt would better help reduce debt-to-GDP ratio; the choice of the ceiling should be consistent with fiscal sustainability and the need for fiscal space. Staff is of the view that a ceiling of 60 percent in 2020 could be appropriate for Israel and given the current macroeconomic outlook it could be feasible.
 - (ii) ***strengthening the link between the expenditure and deficit targets and the debt objective.*** The Government's current deficit path could indeed put debt on the downward path to achieved a level of 60 percent of GDP by 2020. Yet, the current expenditure growth ceiling is too elevated and should be tightened to avoid the adjustment to fall entirely on revenue.
 - (iii) ***enhancing flexibility by targeting a cyclically-adjusted balance and including an escape clause.*** A *cyclically-adjusted balance* would help meeting the debt objective allowing fiscal stabilizers to work during economic fluctuations around the business cycle. However, assessing the permanent (or non-cyclical) position of the economy is challenging. As in many cases deficit targets were not met for sharp drop in revenue, a shock that seriously reduces revenue could be considered as a possible trigger for *an escape clause*. The suspension of the rule could be authorized by a large majority in Parliament, and it could be set to last for a year following the recovery from the shock, i.e. when revenue is back to pre-shock level.
- **Enhancing enforcement.** Establishing an independent body, such as a fiscal council, could further sustain compliance with the rules. A council could help ensure robust medium-term forecasting, by assessing the government's forecasts and plans, and enhance enforcement by independently monitoring the government's progress in meeting the rules. This is discussed further in the following chapter.

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A FISCAL COUNCIL FOR ISRAEL?¹

1. **Fiscal councils are non-partisan agencies aimed at promoting sound fiscal policies.**

Such institutions have been a long-standing feature of a handful of developed economies (US, Netherlands, Belgium, Sweden and Korea). In recent years a number of new councils have been set up in response to the fiscal crisis in Europe, while similar bodies have also been introduced in Australia, Canada, Kenya and South Africa.

2. **An emerging literature suggests that well-designed councils can be effective in improving fiscal outcomes.**

A fiscal council does not have delegated responsibility for policy-making and so cannot guarantee sound fiscal policies. Its influence comes from its mandate to publish independent and authoritative fiscal analysis, which enhances transparency and increases the accountability of decisions taken by policy-makers. Specifically, IMF (2013) suggests fiscal councils can improve policymakers' incentives to opt for sound fiscal policies in the following ways:

- by providing transparent analysis of the fiscal implications of policy decisions over the political cycle, a fiscal council can improve democratic accountability and discourage opportunistic shifts in policy, e.g. pre-electoral giveaways;
- through independent analysis, assessments, and forecasts, fiscal councils can raise public awareness about the consequences of certain policy paths. Hence a fiscal council can raise the reputational and electoral costs of unsound policies; and
- by providing direct inputs to the budget process—for example forecasts or assessments of structural positions—fiscal councils can close technical loopholes that allow governments to circumvent numerical fiscal rules.

3. **The remit and structures of fiscal councils vary widely, depending on country-specific circumstances such as the specific causes of excessive deficits and the nature of the political system.**

However, effective councils can be shown to share some key features: a well-defined institutional structure and a reputation for professionalism and political independence; a clear mandate focused on fiscal sustainability; a duty to be objective and transparent; a strong presence in the public debate; the provision or public assessment of budgetary forecasts; and an explicit role in monitoring fiscal policy rules.

4. This Annex examines the case for a fiscal council in Israel. It considers the role that a fiscal council could play in improving fiscal outcomes in Israel, compares this with the role that the Bank of Israel currently plays in fiscal policy, and considers the evidence on the design features of effective fiscal councils in the context of Israel's institutional frameworks.

¹ Prepared by Tom Josephs.

How could a fiscal council improve fiscal outcomes in Israel?

5. A fiscal council should be designed to address country-specific circumstances.

Therefore it is important to identify areas of fiscal policy-making in Israel that could potentially benefit from a fiscal council. The previous paper sets out a number of areas where Israel's fiscal framework could be improved:

- fiscal policy lacks a clear medium- and long-term fiscal anchor, for example in the form of an explicit medium-term target for debt;
- there is no medium-term budget framework in place to guide policy decisions, as a result expenditure and revenue policy commitments have often been made without full consideration for medium-term fiscal sustainability. This has led deficit targets to be missed and revised; and
- there has been a lack of enforcement of the fiscal rules. Governments have frequently changed the fiscal rules and revised targets, often in response to political factors as well as economic circumstances. There is no regular and official analysis of the factors driving such changes and of the implications for the fiscal position.

6. A well-designed fiscal council could complement the proposed reforms set out in the previous paper, which are designed to address these weaknesses. In particular, there is a role for a fiscal council in enhancing enforcement of the fiscal rules and, if a medium-term framework is introduced, in ensuring medium-term forecasts and estimates of the costs of new policies are realistic and credible. Table 1 provides a summary of the potential roles of a fiscal council in Israel and the benefits this could bring.

7. A primary role could be to monitor and report on compliance with the fiscal rules. This could include *ex ante* analysis of the likelihood that the fiscal rules will be met on the basis of the government's plans and projections, which could be provided alongside the government's budget or shortly afterwards. In addition, a council could provide *ex post* analysis of performance against the rules, explaining the reasons for any deviations from targets or any changes to targets. These activities would bring greater transparency to fiscal policy, increase understanding of the risks to achieving the fiscal rules, and raise public awareness of the fiscal implications of government decisions. This should help to counter any temptation to change targets for short-term political benefit.

Table 1: Summary of potential roles for a fiscal council in Israel

Issue	Role for fiscal council	Potential benefits
No clear medium-term debt target to provide anchor for fiscal rules.	Produce independent analysis of long-term fiscal sustainability in Israel.	Increase transparency about long-term fiscal pressures. Provide evidence base for government's choice of debt target.
	Produce independent analysis of the consistency of the fiscal rules with fiscal sustainability.	Increase transparency about implications of fiscal rules for fiscal sustainability. Increase the cost to the government of changing targets for short-term political benefit.
No medium-term budget framework.	If a medium-term framework is introduced, assess the government's medium-term economic and fiscal forecast or produce its own parallel forecast.	Curb any tendency for the government to base its plans on unrealistic forecasts. Increase understanding of the risks around forecasts.
	If a medium-term framework is introduced, assess the government's medium-term policy costings.	Curb any tendency for the government to base its plans on unrealistic policy costings. Increase understanding of the fiscal risks around new policy commitments.
Deficit targets are frequently missed and revised.	Provide <i>ex ante</i> analysis of the likelihood of targets being achieved on basis of government's budget plans.	Increase transparency about the risks to the achievement of fiscal rules. Curb any tendency for the government to produce unrealistic budget plans.
	Provide <i>ex post</i> analysis of factors driving outturn compared to the government's budget plans.	Increase transparency and understanding of factors driving deviations from plans. Prevent the use of technical loopholes to circumvent rules.

8. This function would be enhanced if the fiscal council also produced an independent analysis of the longer-term outlook for fiscal sustainability in Israel. A number of fiscal councils around the world produce this type of analysis. It typically consists of long-term public finance projections which focus on the prospects for government expenditure and revenue, given long-run trends such as demographic change and natural resource depletion. It can also include an analysis of the government's exposure to specific fiscal risks, including implicit and explicit contingent liabilities. Such analysis helps to raise public awareness about the long-term fiscal consequences of government policy, and increases the pressure on decision-makers to consider such issues when setting policy.

9. A supplementary role could be to evaluate the Ministry of Finance's economic and fiscal forecasts. This would be particularly important if Israel moves to a full medium-term forecasting and budgeting framework. Over such time periods forecasting becomes inherently more difficult and there is an increased temptation to produce optimistic forecasts in order to flatter the fiscal outlook and create space to fund policy objectives. By rigorously assessing the government's forecast, or producing parallel forecasts for comparison, fiscal councils can act to curb such tendencies. Indeed, evidence suggests that countries with effective fiscal councils tend to have more accurate and less optimistic forecasts than others. For example, IMF (2013) found that countries with fiscal councils that were given the task of assessing or producing forecasts had on average lower forecast errors and less optimism bias than countries without such an institution.

10. An additional role within a medium-term framework could be to assess the costings of new government tax and expenditure policies, with the aim of ensuring they are realistic and unbiased. For a council to produce policy costings internally typically requires significantly more resources and staff expertise than is needed for monitoring fiscal policy and assessing forecasts. However, there are examples of councils which scrutinize and publically endorse or reject costings produced by government officials, and this can be done with significantly fewer resources. This would be a particularly important role in Israel where a lack of rigorous estimates of the costs of medium-term policy commitments has often led to expenditure over-runs and a resulting failure to meet the fiscal rules. Such a role can also improve the policy decision-making process by introducing an independent arbiter to help resolve disagreements over the costs of new policies between the Ministry of Finance, spending ministries and the legislature.

11. International experience suggests that in most cases a fiscal council should provide its analysis on an objective basis and not provide normative assessments of the merits or otherwise of the government's policies. In some countries, councils have been given the right to provide normative assessments of the government's fiscal policy decisions. For example, the Swedish fiscal council is tasked with assessing the merits of the government's fiscal policy objectives and fiscal stance. However, in most cases councils are restricted from doing this in order to reduce the chance that they are drawn into political debates, which could place their independence at risk.

The institutional structure and features of effective fiscal councils

12. The institutional structure of fiscal councils varies widely reflecting local legal frameworks, political structures, and resource and capacity constraints. However, recent IMF (2013) and OECD (2013) publications set out a number of shared principles that are important to effective fiscal councils. In summary these include:

- **political and operational independence** is a key prerequisite for the success of a fiscal council. There are a number of aspects to this including: a legal basis for independence; an appointment process which ensures leadership and staff are selected on the basis of merit and technical competence and not political affiliation; and a budget which is not subject to discretionary adjustment. Some countries have recently established councils under existing bodies such as the national audit office. This approach may provide an initial boost to credibility and provide a stable source of financing. However, it also risks creating a conflict of interest with the institution's primary remit and clouding perceptions of the operational independence of the fiscal council. Therefore, on balance credibility is likely to be best enhanced if the council is established as a stand-alone institution. This is a relevant issue in Israel given the current role of the Bank of Israel in producing fiscal policy analysis and advice, which is discussed further in Box 1;
- **a clearly defined mandate** set out in law and in supporting publications which describes the core tasks required and the role of the council in relation to partner institutions. Good practice is to also allow the council flexibility to undertake wider analysis of its own choice in support of its core remit. A clear mandate focused on fiscal sustainability, and the requirement that the government respond to its analysis, provides the institution with the legitimacy and credibility it needs to play an active and influential role in fiscal policy;
- **a duty to be transparent and accountable.** Fiscal councils should promote the adoption of best practice in transparency as this is the key to their effectiveness in raising awareness of fiscal policy issues. This includes making all analysis available to the public and the media. As an independent public body it is also important for legitimacy that a council is clearly accountable to both the legislature and the executive, for example through a duty to present reports and explain its analysis at public hearings of the legislature;
- **a right of access to government information** is vital if the council's analysis is to add value over that produced by external analysts. This should include access to the data, assumptions and modeling underpinning the government's fiscal forecasts and plans. Safeguards are often required to protect confidential budget and taxpayer information; and
- **sufficient resources should be made available** commensurate to the remit of the council. Typically councils that focus on monitoring compliance with fiscal rules and assessing government forecasts, as suggested for Israel, are able to operate with relatively few resources, with up to 10 full-time professional staff members in addition to a small leadership committee. The leaders and staff members must be appointed on the basis of their competence and expertise in fiscal policy and the public finances.

Box 1. The Role of the Bank of Israel in Fiscal Policy

The Bank of Israel currently undertakes some of the functions that might be performed by a fiscal council. The Governor of the Bank has a duty under law to act as “an economic adviser to the government”. Under this duty, the Bank has produced analysis of fiscal policy and the fiscal outlook, and provided commentary on the government’s fiscal decisions. This arrangement has functioned effectively in the past and the Bank produces high-quality fiscal analysis. While establishing a fiscal council in an existing institution can help establish credibility and provide resources, on balance the expanded functions suggested in this paper would be more effectively delivered by a stand-alone fiscal council:

- **expanding the Bank’s role on fiscal policy could lead to a potential conflict of interest with its primary concern for monetary policy and financial stability.** For example, in a situation where inflation was above target the Bank might be perceived to have a preference for fiscal tightening which could influence the analysis it produced. Moreover, a reputation for political independence is important to the success of a central bank’s monetary policy operations, and maintaining this would be more difficult if the Bank were to increase its involvement in what are often highly political fiscal policy issues. International experience suggests that a fiscal council should be an independent stand-alone institution with a clear remit focused on fiscal sustainability, while a central bank’s remit is clearly focused on monetary policy and financial stability.
- **the Bank’s role on fiscal policy is currently not clearly defined, and its activity in this area is at the discretion of the Governor. Reflecting this, over the past its publically-available analysis while of high quality has not always been produced to a regular timetable and the volume of material produced has varied over time.** Moreover, the Bank has not produced the full range of detailed outputs that would be expected of a fiscal council, as set out above. Good practice is that the fiscal council’s remit is clearly defined and it produces regular, detailed and transparent analysis at set points in the budget timetable.
- **there is currently no formal procedure specified for holding the Bank accountable for its fiscal policy advice.** For example, there are no specific procedures by which the Knesset scrutinizes the Bank’s fiscal policy advice. Moreover there is no obligation for the Government to publically respond to the Bank’s advice. Good practice is that the fiscal council is held accountable through dedicated scrutiny and hearings by the legislature and through a duty on the government to respond publically to its advice. Such accountability would increase the demands on the Bank’s senior management who are appointed primarily for their expertise on monetary policy and financial stability, rather than fiscal policy. Analysis of the public finances is a highly-specialized field and senior leaders in fiscal councils around the world typically have significant expertise focused in this area.

13. Two fiscal councils established in the past decade – in Korea and the UK – illustrate the range of structures that councils can take, as described in Box 2. The UK fiscal council is a relatively small independent office of the executive with a remit focused on fiscal forecasting and analysis. The Korean council is an office of Parliament with a much larger staff of around 125 and a wider remit which includes project and policy evaluation. However, both institutions share common features such as a clearly-defined remit, a reputation for professionalism, and duty to be transparent and accountable.

Box 2. Case Study: Recently Established Fiscal Councils in the UK and Korea

The UK established the Office for Budget Responsibility (OBR) in 2010 with a mandate primarily designed to address the perceived optimism bias in the fiscal forecasts produced under previous UK administrations. It is an independent branch of the executive comprised of a senior committee of three and a staff of eighteen. It is tasked with producing forecasts, assessing the achievement of fiscal targets, analyzing long-term fiscal sustainability, and scrutinizing the government's policy costings. Unlike most other fiscal councils, the OBR produces the official forecasts which the government uses when setting fiscal policy and budgets. To do this it has a right of access to relevant government information, analysis, and revenue and expenditure forecasts. Officials must provide these forecasts using the OBR's preferred assumptions, judgments and modeling approaches.

A clear benefit of the introduction of the OBR has been greater forecast transparency. The OBR provides greater detail than previous official UK forecasts, including on the economic drivers of revenue and expenditure forecasts and the impact of new policies. It also provides extensive risk analysis including sensitivity analysis, alternative macroeconomic and fiscal scenarios, and forecast fan charts. This transparency increases wider public understanding of the fiscal position and should bolster the credibility of the forecasts. The OBR's analysis of forecast accuracy also shows that to date its fiscal forecasts have on average been more accurate than those produced by the UK Government over the previous twenty years (OBR, 2013).

In 2003, the Korean National Assembly Budget Office (NABO) was formally established as an office to provide fiscal policy advice to Parliament. The creation of the NABO was driven by political factors – it was established during the first period of divided government in Korea. It was designed to provide the legislature with information and expertise on fiscal and budgetary issues to match that of the executive, and to provide it with the capacity to scrutinize the President's draft budgets.

The NABO is one of the largest fiscal councils with 125 members of staff in 2011 and was broadly modeled on the United States' Congressional Budget Office. It performs all the typical functions of a fiscal council including monitoring and reviewing the government's fiscal policy, developing alternative forecasts, and costing proposals and programs. It also now conducts analyses of long-term structural issues and has begun to develop long term projections. A unique element of its mandate is the evaluation and review of a range of government projects, programs and policy initiatives. It has also started to make normative recommendations on appropriate policy objectives and fiscal stance.

The NABO is seen to provide valuable reports and analysis which increase the transparency of the government's budgetary data. The council now plays a role in public discussions on fiscal policy. It has raised alarms when government policy may not be in line with sound policy settings—even going so far as to recommend an alternative course of action in 2010.

Conclusion: the case for a fiscal council in Israel

14. There is a strong case for Israel introducing a fully-fledged medium-term fiscal and budget framework, and then establishing a fiscal council. Such a council should have a mandate to assess the long-term sustainability of the public finances and monitor and report on the Government's *ex post* and *ex ante* compliance with the fiscal rules. This would increase transparency and raise awareness of the fiscal implications of the government's policy choices. It could also prevent any temptation to use technical loopholes to circumvent rules. Within a medium-term budget framework the council could also assess the government's fiscal plans, forecasts and policy costings, which would help curb any tendency to base plans on unrealistic projections and policy estimates. To avoid being drawn into political debates, the council's analysis should be objective and it should not make normative recommendations on fiscal policy.

15. A fiscal council in Israel would be most effectively structured as an independent and stand-alone institution with a clearly-defined mandate focused on fiscal analysis. While the Bank of Israel has provided high quality analysis on fiscal issues in the past, an expanded role on fiscal policy would require it to produce much more extensive and detailed fiscal analysis which would potentially conflict with its core monetary policy remit. A new institution with the remit suggested above could be of a relatively small size with a leadership committee and up to ten well-qualified staff. The international evidence suggests that it would be vital for the institution to establish a reputation for operational and political independence, and to be fully transparent with a strong media presence.

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DEVELOPING AN EFFECTIVE MACROPRUDENTIAL POLICY INSTITUTION IN ISRAEL¹

1. Extensive work has been in progress towards establishing a Financial Stability Committee (FSC) focusing on macroprudential policy in Israel. However, a consensus is yet to be reached on how best the FSC should be set up, as views differ among the relevant stakeholders. This note draws upon recent work by the Fund (IMF, 2011 and 2013) to discuss possible options for an institutional model in Israel that would best ensure the effectiveness of macroprudential policymaking.

A. Context

2. The Israeli banking system has weathered the global financial crisis relatively well.² Israeli banks proved resilient to global financial shocks, reflecting their prudent funding and lending practices and limited exposures to “toxic” structured assets, underpinned by the conservative and intrusive style of bank supervision by the Bank of Israel (BoI).

3. However, the non-bank financial sector was hit hard by the global financial market turmoil. Pension and provident funds, insurance companies, and mutual funds, all suffered heavily as portfolios lost value and investors withdrew funds, even as corporate bond markets froze during the second half of 2008. In response, the authorities introduced various crisis intervention measures. To some extent, the poor performance of the non-bank financial sector may be traced to their rapid growth in the pre-crisis years, notably in the context of oversight that lagged fast-paced financial innovation. But it also reflected insufficient understanding about how risks in the financial system accumulate and how they affect and interact with the rest of the economy.

4. The authorities recognize that simply ensuring the stability of individual financial institutions or markets is not sufficient, and that an integrated approach is required for the financial system as a whole, focusing in particular on macro-financial feedback loops (BoI, 2011). Against this backdrop, the FSAP Update in 2012 recommended that an FSC in charge of macroprudential oversight be formally established, led by the BoI and comprising of all the relevant regulatory agencies and the MoF (Box 1, and IMF, 2012 a and b).

¹ Prepared by Kotaro Ishi.

² The financial system’s assets are equivalent to 2.5 times GDP, evenly divided between banks and non-banks. Over the past few years, the non-banking sector grew relatively strongly from 100 percent of GDP in 2008 to 120 percent of GDP in 2012, whereas the banking sector shrank from 130 percent of GDP to 120 percent of GDP during the same period.

Box 1. 2012 FSAP Update—Key Recommendations on Establishing the FSC

- Establish more formally a standing national FSC charged with macroprudential oversight. The FSC should be chaired by the BoI and be comprised of all the relevant agencies, including the Ministry of Finance.
- The area of responsibilities of the FSC should be clearly delineated vis-à-vis a crisis management committee.
- The mandate and functions of the FSC should include the monitoring of the sources of systemic risk and the establishment of a policy agenda to mitigate such risks.
- To ensure accountability, the framework should aim to communicate major policy decisions and charge policymakers with undertaking cost-benefit and risks analyses when deciding on actions to be taken.
- The FSC should aim to work by consensus. If this would render the FSC indecisive, a more robust decision making procedure should be put in place.
- Adopt a “comply or explain rule,” or make the decision of the FSC binding on the member agencies.
- Joint publication such as a Financial Stability report could be used as a vehicle for communication of key messages to the general public.

B. Progress in Setting Up A New Macroprudential Authority

5. Financial supervision responsibilities in Israel are shared among several agencies.

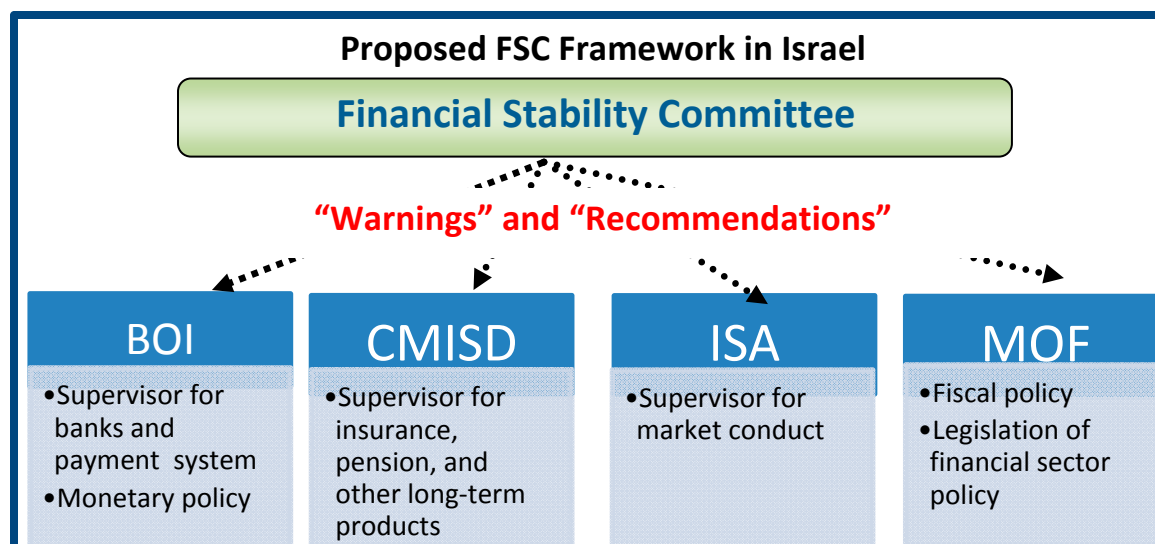
The BoI supervises banks and is responsible for the oversight of the payments system. The Israeli Securities Authority (ISA) oversees the securities sector, while the Capital Markets, Insurance, and Savings Division (CMISD) at the MOF is responsible for the oversight of the insurance and pension sector. Among these agencies, only the BoI has the statutory mandate of financial stability.

6. Over the past few years, the authorities have made significant efforts to strengthen macroprudential oversight.

A Financial Stability Group consisting of representatives from the three supervisory agencies was set up in mid-2011, which has since met periodically and produced internal reports for the BoI Monetary Committee and the other supervisory agencies.

7. The authorities are committed to going further and are preparing draft legislation to establish an FSC.

At present, there is a broad consensus that: (i) the FSC shall be represented by the BOI, the CMISD, the ISA, and the MOF; (ii) the FSC’s functions should include the identification, assessment, and monitoring of systemic risks, and promote information sharing; and (iii) the FSC should not have direct policy tools but only have “soft powers,” such as issuing warnings and making recommendations on remedial measures, similar to the macroprudential policy frameworks for the European System Risk Board (ESRB) and for the German Financial Stability Committee. The structure for micro prudential supervision will remain intact. Those elements are consistent with the 2012 FSAP Update recommendations.



8. However, there is lack of consensus on several other elements of the FSC’s institutional framework, especially on: (i) whether a macroprudential committee should be established separately from a crisis management committee; and (ii) which institution, the BoI or the MoF, should take the lead.

- The BoI’s view is that the FSC focus on macroprudential policies in normal times, consistent with the FSAP Update recommendations. Given that the central bank: (i) is well respected as an autonomous policymaking institution in Israel; (ii) has established strong expertise in the analysis of macroeconomic and financial developments; and (iii) has the responsibility of supervising the banking system and the payment system, it is argued that the BoI should be given the lead role, with the Governor serving as the chairperson. At the same time, a separate crisis management committee should be set up, with Finance Minister chairing the committee.
- The MoF is, however, opposed to the BoI’s view. Given that there is likely to be an overlap of members in the macroprudential and crisis management committees, the MoF favors the establishment of a single committee. It views that a “single” FSC would contribute better to ensuring a smooth coordination and transition from normal to crisis times. Furthermore, because the committee would need to engage extensively in inter-government agency coordination, and crisis management could involve the use of taxpayers’ money, it is viewed that the Finance Minister should chair such a committee.

9. Meanwhile, the ISA is concerned about voting and information sharing arrangements in a FSC. It argues that a simple majority voting rule may not always reflect appropriately an expert’s view, most importantly a view of regulators which own micro supervisory tools for macroprudential policy implementation. Thus, it argues that voting rules should include a veto option. In addition, the ISA raises concern that a market regulator (like the

ISA) and an institutional regulator (like the BoI) tend to have a different approach about how to handle market sensitive information. The former favors full and timely disclosure of information, while the latter tends to be cautious especially if disclosure could potentially cause a market panic and trigger a systemic crisis. This “cultural gap” would not be easily solved.

C. Assessment of the Two Proposed Models

10. There is no one-size-fit-all model. While there is a general consensus that central banks should play a leading role given their expertise in macro-financial analysis (IMF, 2010 and ESRB, 2012), the choice of a specific institutional set-up may depend on individual country circumstances, notably pertaining to the financial structure, regulatory architecture, and historical and political factors.

11. This said a strong macroprudential authority should have following abilities; (i) effectively identify, analyze, and monitor systemic risks; (ii) make timely and effective use of macroprudential tools; and (iii) make coordination among responsible agencies effective in risk assessment, while preserving their individual autonomy (IMF 2011, and Nier et al, 2011). Based on these established criteria, the comparative strengths and weaknesses of the two proposed models (the BoI preferred model and MoF preferred model) are discussed below (Table 1 and Annex 1).

12. Both models have common strengths with respect to the first criterion, “effective identification, analysis, and monitoring.” Because both models have a dedicated macroprudential committee—where regulators get together, bring information, and discuss macroprudential policies—they would have relative strengths in accessing information and using resources and expertise efficiently, especially compared to “decentralized (no committee) models.” The committee structure can avoid “group think,” a potential risk involved if the central bank alone is entrusted with macroprudential policy powers (“fully integrated central bank model”).

However, on the other two criteria, “timely and effective use of policy tools,” and “effective coordination across policies,” comparative strengths and weaknesses are different.

Strengths and weaknesses of the BoI preferred model

13. By establishing a FSC solely focusing on macroprudential policy, the BoI can naturally take the lead role, with the Governor serving as the chairperson. The role of the MoF could be more passive.

Table 1. Strengths and Weaknesses of the Proposed FSC Models

Criteria for assessments	BoI model (BoI leads committee)	MoF model (MoF leads committee)	Memorandum: other models	
			Fully integrated central bank model	Decentralized (no committee) model
<i>For effective identification, analysis, and monitoring</i>				
Access to relevant information	Strong	Strong	Very strong	Weak
Using existing resources and expertise	Strong	Strong	Very strong	Weak
Challenging dominant views of one institution	Strong	Strong	Very weak	Weak
<i>For timely and effective use of policy tools</i>				
Strong mandate and accountability	Strong	Weak	Strong	Very weak
Incentive and willing to act	Strong	Weak	Strong	Weak
Ability to acquire new powers and tools	Neutral	Strong	Weak	Various
<i>For effective coordination across policies</i>				
Coordination between macroprudential and monetary policies	Strong	Neutral	Very strong	Weak
Coordination between macroprudential and fiscal policies	Neutral	Strong	Weak	Neutral
Preserving the autonomy of separate policy functions	Strong	Weak	Strong	Strong
Memorandum items: key elements				
Chairman	BoI Governor	Finance Minister	Central bank governor	N/A (no committee)
Role of MoF	Passive	Active	No	Various
Comparable type of models in IMF (2011)	Model 2	Model 3	Model 1	Models 5-7
Other country examples	UK	US and Germany	Ireland	Australia, Canada, and Switzerland

Sources: IMF (2011) and Nier *et al.* (2011).

- With a single mandate on macroprudential policy, the committee's size could be smaller, facilitating the process of decision making. Alongside, with the FSC given the clear (single) mandate of macroprudential policy, this model could more effectively assure accountability.
- By giving the central bank the lead role, the FSC could piggyback on the autonomy of the central bank. A high degree of autonomy is beneficial, akin to the case of monetary policy, particularly because macroprudential policy decisions can be unpopular politically, and alongside, expert knowledge is important (Ingves, 2013).
- This model can better facilitate coordination with monetary policy and bank supervision, and effectively utilize the central bank's analytical capacity and resources. Central banks, in general, are considered to have strong institutional incentives to ensure the effectiveness of macroprudential policies, because, if macroprudential policies are ineffective, this could complicate monetary policy, or in the event of a crisis, lead to costly crisis management in the banking sector (IMF, 2011). Given the central bank's strong incentives, this model would help ensuring the committee's willingness to act.
- Open and broad discussions can be promoted by including non-executive experts in the membership, as in the case of US and UK frameworks. These experts would likely not have a conflict of interest and neither would they impinge on the autonomy of the central bank and other regulators. They would enhance the quality of the deliberations, without being prejudiced towards excessive regulations. Accordingly, this model would contribute to ensuring a balanced judgment and enhancing the legitimacy of the FSC's decision.

14. A potential drawback of this model is that given that the role of the MoF is relatively small, the MoF's motivation to cooperate may diminish. For example, the scope of enlarging the macroprudential toolkit to include, for example tax policies, could be more limited. There could also be a limitation on enacting new legislation, for example, to introduce new macroprudential powers or to expand the perimeter of regulation.

Strengths and weaknesses of the MoF preferred model

15. The active presence of the MoF, with the Finance Minister serving as the chairperson, would help bolstering the scope of macroprudential policies, if necessary. The MoF is also better positioned to coordinate actions by a broader set of government agencies. For example, the FSC could more effectively influence relevant government agencies to take action to address the problem of housing shortages (which has in part contributed to surge in house prices in recent years). Furthermore, coordination between macroprudential and fiscal policies (in particular, tax measures) would be enhanced.

16. However, there are several disadvantages.

- Because the role of the MoF is strong, there is risk that short-term political considerations could prevail over prescient macroprudential considerations. This risk is not trivial, especially because senior MoF staff positions, including that of the Minister, have been subject to quite frequent changes (for example, over the last 10 years, seven ministers have served).
- The model could put at risk the autonomy of the regulators and the BOI, particularly given that the MoF has strong influence over personnel management in the appointment process of the heads of the BoI, ISA, and CMISD.
- As an option, to protect the autonomy of the central bank, the BoI could be given a veto power, as in the case of German framework. However, this could potentially undermine the timeliness of decision making.
- Given that the FSC has dual functions of macroprudential policy and crisis management, the size of the committee could become larger, as several other agencies important for crisis management operations, such as the Prime Minister Office and the Accountant General's Division at the MoF (though they are less relevant for macroprudential policy), may want to, rightly, participate. The larger size of the committee would make a decision making process complex, undermining the timely and effective use of macroprudential policy tools. Alongside, with many agencies involved, the committee may face communication challenges, weakening its accountability.

On balance, the BoI preferred model appears to better contribute to strengthening overall macroprudential oversight, while preserving the integrity of the existing regulatory framework in Israel.

17. The main functions of a crisis management committee are different from that of a macroprudential committee (Table 2). Most importantly, a macroprudential committee has an active policy setting and implementation role and is given macroprudential tools (such as “warnings” and “recommendations”). In contrast, the crisis management committee is more of a coordination mechanism for relevant government agencies. Besides, macroprudential policy and crisis management reside in different policy areas, and thus the approach to accomplish their respective mandates could be different. Especially, macroprudential policy can be characterized by an open discussion where all relevant expertise be effectively utilized and where different views are debated. In contrast, the approach to crisis management should be more practical and pragmatic.

Table 2. Conceptual Comparisons—Main Features Of A Macroprudential Committee and A Crisis Management Committee (A General Case and Not Specific to Israel)

	A Macroprudential Committee	A Crisis Management Committee
Mandate	Macroprudential policy: the use of primarily prudential tools to limit systemic risk (IMF, FSB, and BIS, 2009)	Crisis preparedness and management
Membership	Central bank, micro-prudential regulators, Ministry of Finance, and potentially external non-executive experts.	Central bank, micro-prudential regulators, Ministry of Finance, and other government agencies relevant to crisis management (such as deposit insurance corporation, and the prime minister office).
Chairmanship	Central bank governor is desirable	Finance Minister is desirable
Powers and policy tools	The committee could own direct policy tools (e.g., counter cyclical buffers, sectoral capital requirements, loan-to-value ratio) and/or soft powers (e.g., issuing “warnings” and making specific “recommendations on measures” to micro-prudential regulators.	The committee does not own policy tools. The main task of the committee is coordination.
Nature of information discussed in committee meetings	Typically, aggregate financial information relevant systemic risk analysis	In addition to aggregate financial information, specific information about individual institutions might be used
Communication	Greater transparency and timely disclosure to the public is desirable	Transparency is desirable but in crisis times, the modalities of communication (e.g., scope and timing) should be wary of adverse market reactions aggravating a crisis.

19. Several countries have considered setting up a macroprudential authority purely focusing on macroprudential policy. In Sweden, the Swedish Financial Crisis Committee—an independent committee appointed by the government to examine the Swedish legal framework on crisis management—recommended that a macroprudential council be established separately from the existing Stability Council, which focuses on crisis management and is chaired by the Finance Minister (Government Office of Sweden, 2013). In the UK, the Financial Policy Committee at the Bank of England is not explicitly mandated to manage crises, because “the demands of crisis management – in terms of players, tools, priorities and timescales– differ, in some cases significantly, from those relevant in peacetime” (Clark, 2012).

20. The bottom line is that the BoI preferred model seems to have more merits than the MoF preferred model. First, the committee’s membership could be kept at a reasonably small size, while non-executive experts could be involved. Second, by giving the BoI the lead role and the chairmanship, this model would better exploit the central bank’s incentives to act and efficiently mobilize its resources. Third, the role of the BoI and MoF can be clearly separated, thus better aligning their comparative expertise with their respective responsibility, and contributing to preserving the autonomy of each regulator and the BoI.

D. Additional consideration

The voting arrangements and transparency and accountability arrangements would also be crucial elements for the effectiveness conduct of macroprudential policy.

21. On voting arrangements, in principle, the FSC should aim to work by consensus. However, disagreements could emerge and persist, delaying policy action, and thus a voting rule is needed. Voting, in general, should be subject to a simple majority or a qualified majority rule, rather than a unanimity rule. This would help reduce the scope for a single committee member to block a policy decision or the risk that no action is taken as a result of persistent disagreement between member agencies. To address ISA’s concern, depending on the significance of the matter to decide, the FSC could have a choice to use either a simple majority rule or a qualified majority rule—for example, a qualified rule could be used for making a recommendation on specific remedial measures or making a recommendation public (as in the case of the ESRB).

22. The FSC should be able to use “warning” and “recommendations” flexibly depending on circumstances.³ However, to protect the integrity of the autonomy of micro-prudential regulators, some safeguarding mechanisms need to be considered. Most importantly, “recommendations” should not be made with respect to individual institutions (as in the case of

³ “Warnings” would be appropriate when the FSC addresses the legislature, the market, or the public at large, or raises concern to the government about broader macroeconomic imbalances. “Recommendations” would be effective to influence specific regulatory actions by each regulatory agency, and its effectiveness could be enhanced with “comply or explain” mechanisms attached.

the UK's framework). Furthermore, the FSC's recommendations should be of a general, rather than overly specific, nature, not conflict with supervisory objectives, and be confined to areas where a recipient of "recommendations" already have legal powers to take action.

23. Finally, appropriate accountability requirements would be clearly instituted to enhance the FSC's willingness to act. In particular, they can help counter biases in favor of inaction or insufficient action, particularly given that macroprudential policy decisions would be susceptible to lobbying of the financial industry or political pressures. Accountability arrangements also help the public understand the objectives of the committee and judge its performance against these objectives. Following options could be considered.

- Publish a record of meetings (which is different from the publication of full minutes). This is useful to inform the public of issues discussed and the major deliberations, which led to the FSC's decision.
- Publish a policy strategy paper. This is useful to guide the public's expectations as to how and when the FSC will use its policy tools and to achieve accountability for macroprudential policy.
- Publish an annual report and a financial stability report. This would help enhance greater public awareness of the activities of the FSC. In the US and Germany, macroprudential authorities are required to publish such reports by law. Separately, the FSC could publish its own financial stability report.

Appendix I. Stylized Models for Macroprudential Policy

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Degree of institutional integration of central bank and supervisory agencies	Full (at a central bank)	Partial	Partial	Partial	No	No	No
Ownership of macroprudential policy mandate	Central bank	Committee related to central bank	Independent committee	Central bank	Multiple agencies	Multiple agencies	Multiple agencies
Role of fiscal authorities	No	Passive	Active	No	Passive	Active	No
Separation of policy decisions and control over instruments	No	In some areas	Yes	In some areas	No	No	No
Existence of separate body coordinating across policies	No	No	No	No	Yes	Yes	No
Country examples	Ireland (new)	UK (new)	France (new) US (new)	Belgium (new)	Australia	Canada	Iceland

Source: IMF (2011).

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