

**Report of the External Evaluation Committee for
the Research Department at the Bank of Israel**

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Governor Fischer appointed an External Evaluation Committee to assess the functioning of the Research Department at the Bank of Israel. The committee consists of Laurence H. Meyer (chair), senior managing director of Macroeconomic Advisers and a former governor of the Federal Reserve Board; Martin Eichenbaum, Ethel and John Lindgren Professor of Economics and former Chair of the Department of Economics, Northwestern University; Elhanan Helpman, the Galen L. Stone Professor of International Trade, Harvard University; and Philip Lane, Whately Professor of Political Economy and Head of the Economics Department, Trinity College Dublin.

Governor Fischer provided the “terms of reference” for the committee, that is, a mission statement, reported in Box 1 below.

During their three day visit, the committee interviewed the Governor, Deputy Governor, and Director of Research several times, external members of the policy committee, the two division directors, the unit heads, groups of researchers in each of the two divisions, an adviser, directors of the Supervision Department and the Market Operations Department, the head of IT, current and former government officials, an economist at an international organization very familiar with the Department, a professor, and the head of a think tank. After the visit, they had a conference call with the former director of research at the Bank.

The level of cooperation was uniformly outstanding, and many of the recommendations in this report were suggested to us during our conversations at the Bank. We want to thank the Governor and Deputy Governor, other policymakers, senior management of the Research Department, especially the Director of Research, the unit heads and the many researchers who very frankly shared their views on the functioning of the department, and NoaHeymann who so ably coordinated every aspect of our visit.

Box 1. Terms of Reference: External Evaluation of the Bank of Israel's Research Department

At a time soon after the new Head has taken over in the Bank of Israel's Research Department, and following the recently enacted new Bank of Israel law, it is appropriate to seek an external review of the Department. This review should aid the new Head and the management of the Bank in thinking through both the goals of the Department and possible changes in its organization and functioning in the years ahead.

At the start I should make it clear that it is Bank policy that almost all Bank research should have immediate or eventual potential policy applications.

The terms of reference consist of the following set of questions.

1. The focus of research: How much of the research should focus on formulating and implementing the operations of the Bank, and how much should relate to issues concerning the economy as a whole, that is research relevant to the Governor's role specified in the new and the previous law as economic adviser to the government?
2. On what basis should the subject matter of the "economic adviser" research be determined? What are the main topics that should be covered in this regard? Are there important areas of research that fall under this heading that are not covered, or are inadequately covered?
3. How should the research agenda for Bank relevant research be determined?
4. On what basis should the proportion of Bank research be allocated to immediate policy issues versus that devoted to research with a longer and possibly less certain policy-related payoff be determined?
5. Are interactions within the Research Department and cooperation with other departments adequate to the fulfillment of the goals of Bank research?
6. Should there be more Research Department interaction with researchers and policy-makers in government ministries, particularly the Treasury?
7. Would there be a benefit from strengthening cooperation with economists in academia?
8. Is there a need for a more specialized group of people whose training is in finance?
9. Is the quality of Bank research adequate to the tasks of the Research Department as defined in your report?
10. Does the Bank succeed in attracting the right quality of people to the Research Department?
11. Should everyone in Research have to do some policy relevant research or should the right balance be achieved at the level of the department, with different individuals having more or less involvement with different types of research?
12. Should the Department be reorganized, and if so how?

I. The Organization of the Research Department

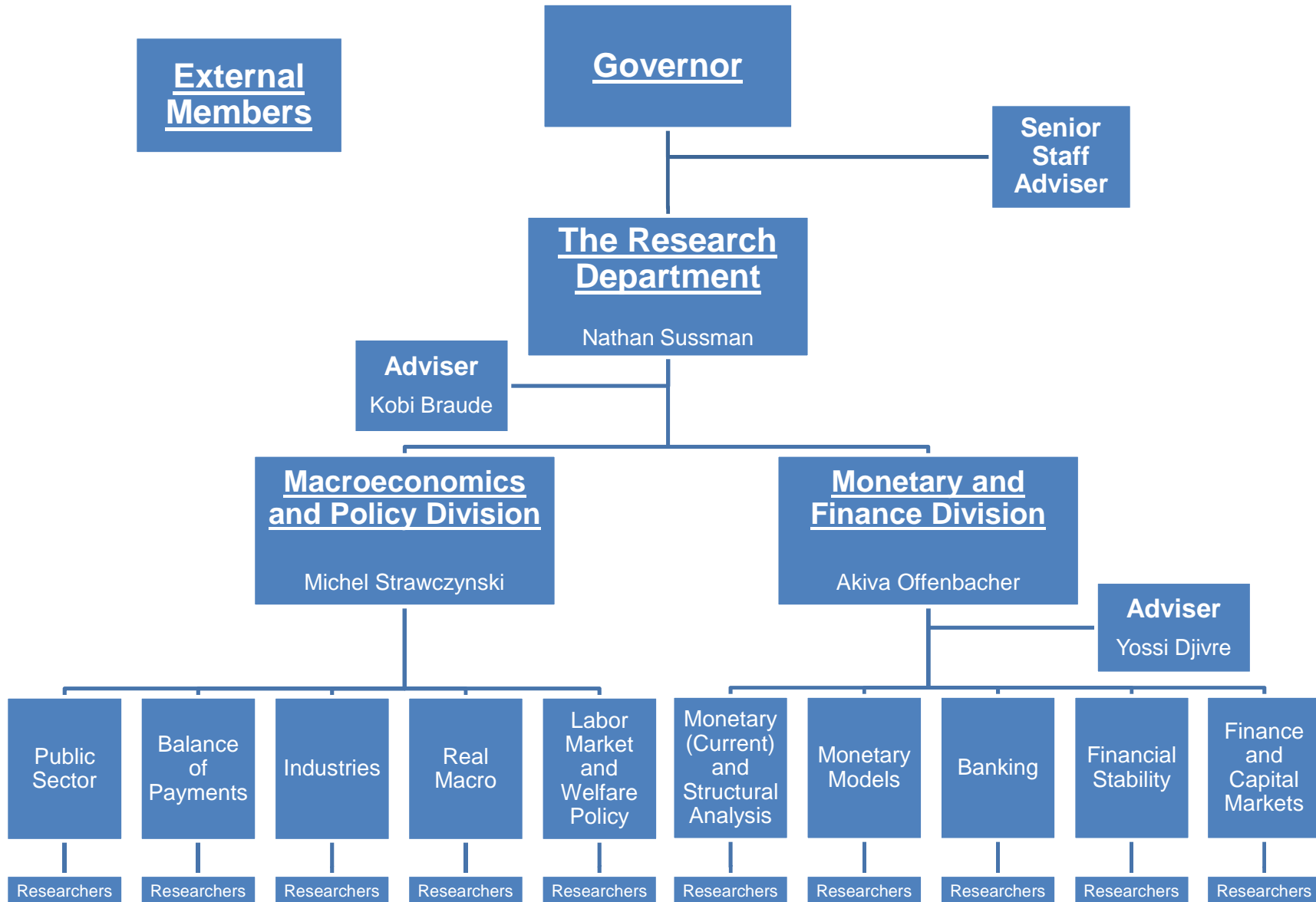
The research department of the Bank of Israel faces an unusually large set of challenges that reflect the dual mandate of management: conduct monetary policy and serve as an economic advisor to the government. As a result, the research department is engaged in short-term policy analysis of a broad nature as well as pure research.

Our recommendations for reorganization are made without any consideration of administrative impediments, and the costs and disruptions inevitably associated with major reorganizations.

The key features of the current organization are that there is a director of research who oversees the functioning of the department and reports to the Governor; there are two Divisions --the Macroeconomics and Policy Division and the Monetary and Finance Division--each headed by directors who, in turn, report to the Director of Research; and 10 unit heads who report to the division directors and directly oversee the researchers' work. Chart 1 illustrates the current structure of the Research Department.

Our recommendations are to add a third Division, the Financial Stability Division; flatten the structure of the department to increase the number of researchers relative to managers by converting some of the unit head positions into equivalent non-managerial positions, thus improving the direct management of researchers; shift around some of the responsibilities of each of the two current divisions to better match their missions; and to establish a number of "teams" that include staff from the current two divisions or across several departments at the Bank and would be tasked with coordination across the divisions and among the departments represented.

Chart 1: Current organizational structure of the Research Department



Add a Financial Stability Division and a Financial Stability Team

The management of the Research Department and Bank management appears to have effectively made the decision to add a Financial Stability Division. We want to reinforce the importance of moving in the direction of increased focus on financial stability, offer suggestions about how this might best be achieved, and identify some challenges to achieving this objective.

We recommend that a third Division be added to the Research Department to consolidate and expand current analysis and research related to financial stability and to make recommendations about macroprudential policies. These issues are of increasing focus for central banks around the world, including the Bank of Israel.

There are at least three challenges associated with setting up this division. The first challenge is that the analysis of threats to financial stability and the development of macroprudential policies require, unlike most other central bank responsibilities, an *interdisciplinary* effort that cuts across several *departments*, including the Supervision and Market Operations Departments at the Bank of Israel. **To facilitate interaction and ensure effective cooperation and coordination, we recommend that a “Financial Stability Team” be formed. The team should include representatives from each of the relevant departments. The team leader should be chosen from the Finance Stability Division in the Research Department. The Financial Stability Division should act as the staff-level anchor for the Financial Stability Team. In addition, consideration should be given to setting a Financial Stability Committee, composed of key members of the Financial Stability Team. This committee would oversee the work of the team and make recommendations to management about matters related to financial stability and macroprudential regulation.**

The second challenge is to ensure that the new division gets the data needed to carry out its mission of crisis prevention and management. There has been long-standing concern inside the Research Department about the lack of access to data collected in the Supervision Department, specifically information regarding individual banks. We believe access to this data is vital for the new Financial Stability Division to fulfill its mission. Fortunately, this issue seems well on its way to being resolved as a result of much better cooperation between the Research

and Bank Supervision Departments, aided by a change in the law of the Bank of Israel. Hence, our only recommendation is to continue the effort to improve cooperation. This direction will, of course, become even more important as the two departments work more closely together than ever on financial stability issues.

The third challenge is staffing the new division. The Bank will, of course, move some researchers in the Research Department to the new division. But it is not clear that there are enough researchers currently at the BOI with sufficient expertise finance, financial markets and financial institutions to effectively carry out the tasks of the new division. The staff may need to be expanded, a consideration we return to below.

Flattening the Management Structure and Improving Effectiveness

There is currently a paradox with respect to how the department is managed. On the one hand, there appears to be too many managers. On the other hand, the department is not being managed as effectively as it could be.

There are currently 13 managers in a department with 50 economists and 72 staffers including student research analysts. These managers include a department director, 2 division directors, and 10 unit heads. In a few cases, unit heads supervise only one or two economists. This structure is top heavy on managers and reduces the number of effective researchers. Moreover, the current structure does not, in the end, provide effective management of researchers.

We recommend that the department's current structure with respect to the senior management be maintained: a research director and now three division directors, each reporting to the research director.

However, we recommend that the structure below senior management be rethought and flattened to improve the oversight of researchers and the interaction of management with researchers.

We recommend converting unit head positions into non-managerial positions of equivalent rank.We suggest appointing a deputy director in each division. The

three deputy directors would report to their division directors. Along with the Director of Research and the Division Directors, the deputy directors would directly supervise and interact with all the researchers in their division, and mentor the younger researchers.

This option would reduce the number of managers from 13 to 7, even taking into account the new Financial Stability Division. As a consequence, 6 managers would be freed to concentrate on current analysis and research. In our view, a smaller number of well-chosen deputy directors would be more effective and efficient in directly managing researchers than ten unit directors. A larger number of researchers in each division reporting to a single manager would mean that management is more streamlined and there would be more flexibility in moving researchers among projects.

Matching Missions with Tasks

We recommend that the department managers rethink what tasks logically belong in each division, in the spirit of “zero-based budgeting”. Below we share thoughts on ways in the tasks could be re-organized.

Currently, models that include nominal variables are housed in the Monetary and Finance Division, including, the department’s most important model, the Dynamic Stochastic General Equilibrium (DSGE) model. Indeed, all models that include the determination of inflation are called “monetary models” in that division. They are not; they are “macro” models, including, as macro models do, *real* variables, *price* variables, and *financial* variables. Any model used for forecasting or scenario analysis should integrate the *real* side, the *price* (inflation) side, and the financial side. Leaving models that do so in the Monetary and Finance Division leaves the Macroeconomics and Policy Division with models that have *only* real variables.

We recommend consolidating all research on basic “macro” models into a single division. Specifically we recommend that ongoing work on the DSGE model be transferred from the Monetary and Finance Division to the Macroeconomics and Policy Division.

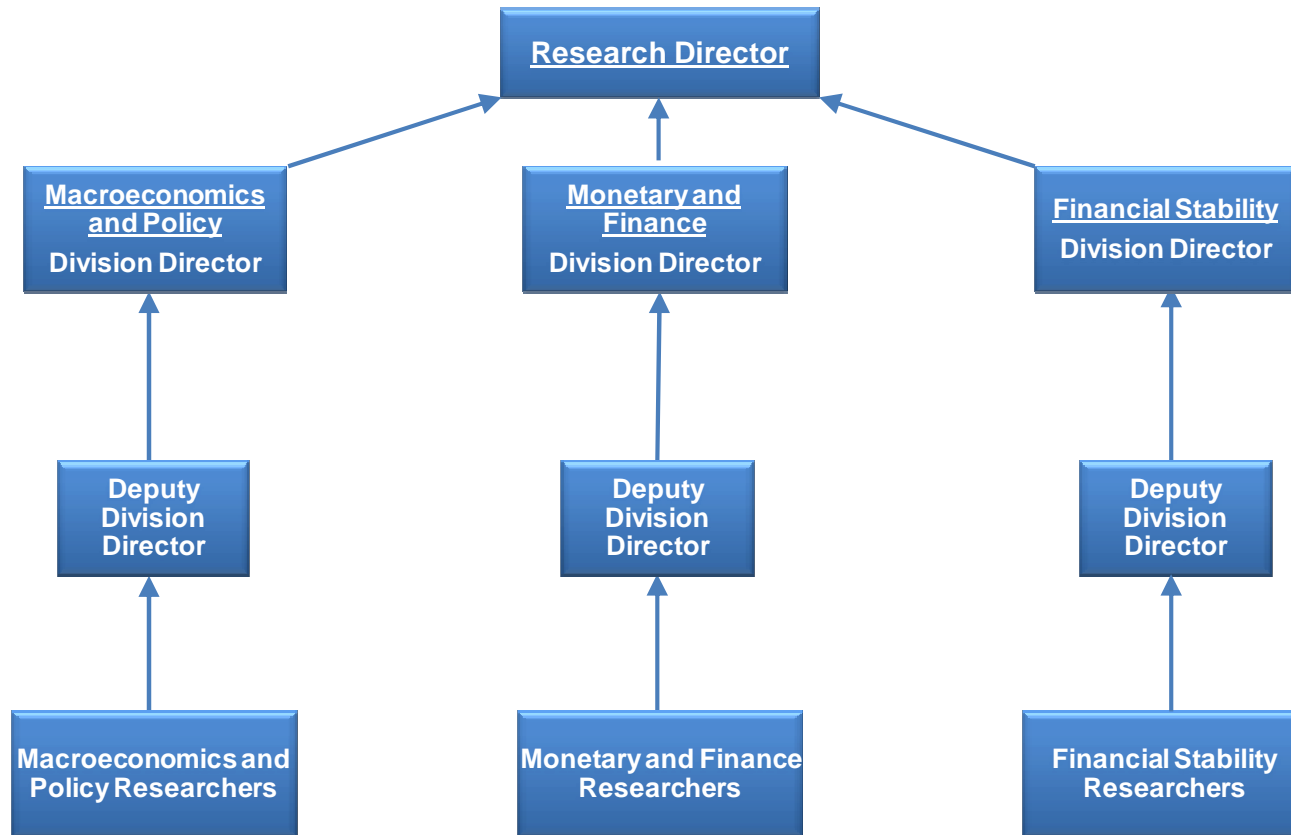
Some researchers pointed out that one of the most important directions of research on DSGE models today, and likely the most important one for central

banks, is to extend them to include a richer set of financial variables. See more on this point below. Model development, in this case, and especially under our suggested reorganization, would involve researchers from both divisions. This is one example of tasks that cut across the divisions and have to be coordinated. No one division “owns” the DSGE model, but research and use of the model has to reside in one of the two divisions. We believe that the natural and logical home is in the Macroeconomics and Policy Division. To recognize the fact that both divisions work on the DSGE model, and to facilitate coordination, **we recommend that a “Model Development Team” be established including researchers from each division.**

The Monetary and Finance Division has essential research to do on monetary policy and financial conditions, most importantly on the financial variables that are part of the monetary policy transmission mechanism. Researchers in this division are actively engaged in research on many topics, including the behavior of nominal and real long-term interest rates, the yield curve, risk spreads and measuring private sector inflation expectations. Looking forward the division could also focus on monitoring international financial and assessing the state of the financial sector for signs of systemic risk.

The Monetary and Finance Division will become smaller in the reorganization we recommend, as some tasks and researchers would be shifted to the Macroeconomics and Policy Division and because some researchers would be shifted to the new Financial Stability Division. But we believe that keeping divisions equal sized should never be an objective of the department. Indeed, it seems inevitable that the Macroeconomics and Policy Division will be larger than the Monetary and Finance Division, especially if work on financial stability is moved to a new division. The issues raised by different sized divisions are entirely management issues, for example, how many deputy heads or unit heads to have in each division.

Chart 2: Proposed organizational structure of the department.



The work on global output resides in the Market Operations Department. Currently, staff from that department makes the presentation on the global outlook to the Monetary Policy Committee. This choice is not a cosmetics issue. It can have real consequences, potentially impairing the ability of the Research Department to put together a forecast for the Israeli economy that is consistent with the outlook for the rest of the world. The committee recommends that the Research Department expand its work on the global economy and the international economics.

The forecast itself, necessarily involves pulling together staff from the Macroeconomics and Policy Division and the Monetary and Finance Division. The forecast already involves a small team, on a rotating basis. To formalize this joint effort and perhaps make it more effective, **we recommend that the Department consider establishing an explicit “Forecast Team,” with staff from both divisions, with a permanent team leader from the Macroeconomics and Policy Division, or at least a leader who oversees the team and coordinates the forecast process for a year at a time.**

II. Priorities

The committee was also asked to focus on the priorities in the Research Department between current analysis, short-term policy relevant research, and longer-term policy relevant research. We did so in the context of the stated policy of the Bank of Israel that all research should be policy-relevant.

Priorities in principle and in practice

In *principle*, the allocation between current analysis, short-term policy relevant research, and longer-term policy relevant research is 1/3, 1/3 and 1/3. Apparently this policy is conveyed to new hires. In *practice*, there is uniform agreement that the actual split is ½ on current analysis and ½ on research. The allocation within research is tilted in the direction of short-term research. Many researchers told us that the other two priorities end up crowding out long term research, which becomes, in effect, a “residual”. **The committee recommends that the Director of Research meet with the Governor and decide how to align**

official priorities with actual priorities. The Director of Research should then communicate the resulting allocation to current staff and new hires. In practice such an alignment means either protecting time for long-term research or shifting official policy to 50/50.

The current allocation of priorities reflects at least two considerations. First, the size of the staff is inadequate relative to the demands placed upon it.

Second, significant resources are devoted to internal memos and public documents. The full extent of these resources may be unnecessary.

We understand the desire of Bank Management to reduce spending. **Nevertheless, we recommend that the Governor and senior management of the Research Department meet to assess whether and to what degree the staff of the Research Department should be and can be expanded.** We are not, in a position to offer recommendations on how much the staff should be expanded. However, we did hear from some managers that the staff will need to be substantially expanded to meet current demands, the staffing needs of the new division, and to allow the actual allocation of priorities to be aligned with official priorities, in a manner consistent with preserving the current high quality of research.

The Important Role of Students

Our understanding is that the BOI uses a particular formula to compute the size of the staff, including here both researchers and students who serve as research assistants. According to the formula, one researcher equals two students. Currently there are roughly one $\frac{1}{2}$ full-time students per two researchers. That ratio is woefully inadequate and severely impedes the productivity of researchers, reinforcing the divergence between priorities in principle and practice.

It is uniformly appreciated that students make a very important contribution to the department. As we understand it, they are available at relatively low cost. **The committee recommends that the official formula weighting students and researchers be revisited. Bank management should meet with the senior management of the Research Department to consider changing the formula so**

that one worker equals three or *four* students. Of course, this will be counterproductive if more research assistants (RAs) come at the expense of fewer economists today. So, as with many of our recommendations, the recommended change in the formula is also about the size of the Department's budget.

Another problem with respect to student RAs is that they no longer remain at the Bank for as long as used to be the case. In the past, they used to stay for a full three-year term, under contract for the first 18 months, and then typically staying for another 18 months. They now often leave after one year. While two years is a standard amount of time for such positions in many central banks, it may not be optimal for the BOI to adopt such a strategy given the cost efficiencies of students, their obvious talent and energy, and the lack of a deep pool of applied macroeconomists in Israel. **Accordingly we recommend that management consider ways of retaining the best RAs for a third year, presumably in part by offering higher paying contracts to the best candidates in their third year.**

Individual Priorities vs. Department Priorities

We believe that the 1/3, 1/3, 1/3 allocation in principle (or the 1/2, 1/2 allocation in practice) should apply to the Department in general, but not to individual researchers. After all, economists believe in comparative advantage. **The committee recommends that priorities vary for individual researchers, with a larger allocation for the work that each researcher excels at.**

Department management today apparently tries to allocate current analysis and short-term research "equally" among researchers. But such assignments in practice go more to the best researchers, who then may have the least opportunity, rather than the most, to do long-term research.

However, the committee recommends that all researchers contribute to current analysis and short-term research. Researchers at the Bank are, after all, at a central bank, and their own priorities should reflect that fact.

The committee recommends that there be maximum and minimum time allotments for current analysis, short-term research and long-term research. An

example would be a maximum of 80% on current analysis and short-term research and 20% on long-term research, at one extreme. A very small number of exceptional researchers perhaps might be allowed the maximum 80% allocation for longer-term research and short-term research, with perhaps 50% of their time allocated to long-term research.

Only a very small group in the Department would likely qualify for the maximum allocation to long-term research. This group would consist of individuals whose research is of such high quality that they publish in peer-reviewed international journals. In any case, the director of research and division directors should determine what the qualifications are to be in this group. We also recommend that the researchers in this group be assessed every two or three years to determine whether each member should remain in that group over the next two or three years. Senior managers **should ensure that these researchers have *blocks of time* to devote to their research. They should not be continuously interrupted by work on current analysis and responding to requests for short-term research.**

Some researchers at the BOI do not have the capacity to do meaningful original work. **The committee recommends that those whose long-term research is judged to be of lower quality, or who do not want to do longer-term research, should write other types of applied research papers. One category could be papers that summarize the “state-of-the-art” in areas of interest to the bank.** We understand that this is already the practice in some units. Another category of papers would focus on the structure of the Israeli economy and its financial system. These types of papers could serve to improve the foundational basis for policy analysis.

We conclude this section with the observation that there appears to an insufficient amount of time and energy devoted to forward-looking planning. This problem is particularly stark with respect to the work plan (see below). **We recommend that senior department management make it a priority to be more forward-looking in developing and executing the work plan. The problem is also evident with respect to long-term research projects. We recommend that senior management discuss with key personnel the nature of their current and future long-term research plans and whether these plans are consistent with the work plan and the longer-term needs of the department.**

III. Current Analysis

“Current analysis” is defined at the Bank of Israel, as at other central banks, to include the collection, monitoring, and analysis of incoming data to understand past developments in the economy; preparing forecasts and developing alternative scenarios to support monetary policy decision making; providing input to Director of Research’s policy recommendation to the Monetary Policy Committee; and writing internal memos for policymakers and reports for the public.

We believe that the Research Department could more efficiently carry out current analysis if some of the current internal memos and external reports were dropped or made more concise.

Preparation of external reports is essential to central bank accountability and communication with the public. Internal reports for policymakers are the principal way the staff’s views on the outlook and monetary policy are communicated to monetary policymakers. But the resources devoted to current analysis take resources from research. So it is very important to accomplish this task *efficiently*.

Public Reports

Current Economic Developments is a public document prepared by the staff three times a year and is about 40 pages. It is mostly a series of charts and tables about indicators of economic activity, inflation, interest rates, etc. It also includes some discussion that provides further detail about the indicators, what we call “talking tables.” However all of the discussion is *backward looking*. It does not add much analytical value. As a result, we have some skepticism that it meets the cost-benefit threshold. **The committee recommends that the Department consider whether *Current Economic Analysis* should be dropped.** Almost universally, researchers and management viewed the sections on special topics at the end of *Current Economic Developments* as a very useful way of publishing smaller scale research. **If the report is discontinued, we recommend the department find another venue for publishing this material. If the Department opts to continue this document, we recommend that it be published fewer times each year,**

especially avoid overlap with the *Annual Report* and the *Monetary Policy Report*, and that the Department rethink its contents.

Another public document is the *Monetary Policy Report* (formerly the *Inflation Report*). It is published twice a year, is required by the Bank of Israel Law, and it is presented to the Knesset when the Governor testifies. **We believe that the *Monetary Policy Report* (MPR) could be substantially improved. It is, in principle, “owned” by the policymakers. So they should review it, decide whether they are satisfied that it reflects their views, and think about how it might be improved upon. In a nutshell, the Monetary Policy Committee should be actively involved in drafting the MPR.**

The MPR does a good job of reviewing recent economic developments. But it could do a better job telling a story about how the various parts of the outlook are interrelated; about why the economy evolved in the way it did; why, if at all, the outcome differed from the staff’s expectations; and review monetary policy decisions over this period and how they were driven by the evolving staff forecast and recent economic developments. The *Monetary Policy Report* does accomplish some of this, but does not fully fulfill this vision. It does tell a story behind the tables, discusses economic developments over the last six months, reviews monetary policy decisions over this period, and explains policymakers’ rationale for those actions. It also reviews the staffs’ forecast over this period and how it drove policy decisions. This material is often excellent.

Our principal criticism is that this report is not at all *forward looking*. **We recommend that the *Monetary Policy Report* be modified to become more forward-looking by adopting the following suggestions. First, it should present policymakers’ views about the outlook, perhaps in the context of the staffs’ most recent *forecast*. *Second, it should* discuss the policy path that is part of the staffs’ forecast. *Third, it should, at least qualitatively, discuss any changes in the outlook suggested by recent development. Finally, the MEP should discuss the critical future challenges faced by monetary policymakers.***

The Bank’s most resource intensive and ambitious public report is the *Annual Review*. There is no question that this is an impressive report. Indeed one senior manager called it “glorious”. An economist at one of the international financial organizations called it a “remarkable” document. More generally we heard from

various sources how valuable the report is to non-BOI policymakers, academics and individuals in the private sector. The Annual Review is a clear example of a valuable, public good provided by the BOI.

That said, we heard estimates from the staff that this report consumes the equivalent annual time of four full-time employees. Evidently, the *12 – 14 staff* members involved in preparing this report cannot do any research *from November through March*. To the extent these estimates are accurate, preparing this document absorbs close to 10% of staff resources over a year. **The committee recommends that this report be made more concise to reduce significantly the resources it consumes.** The Department might *start* with a resource constraint, perhaps at least *half* as much as the current effort, and determine how to adjust the Annual Report to fit that resource allocation. For instance, some topics could be covered on a bi-annual or tri-annual basis, rather than receiving a complete, in-depth treatment in each annual report.

Internal Reports

The principal internal report written by the staff for policymakers is the *Monthly Evaluation for Monetary Planning*, generally referred to as the “briefing book” inside the Bank. This report is the basis for the staff presentation on the outlook at policy meetings. Like most of the reports written by the staff, this one is heavy on discussion of past developments and relatively light on forward-looking issues. **We recommend that the Research Director and the Director of the Monetary and Finance Division should confer with policymakers to see how the briefing book report could be improved upon to better suit their needs.**

One policymaker said he never read the report, but was quite satisfied with the PowerPoint presentation by the staff at policy meetings. We have our own thoughts about how to improve this report, including dramatically shrinking its length. **We recommend that the twenty or so charts and tables in this report be moved to a separate “chart-pack”, available to policymakers online.** We expect that policymakers see enough charts in the PowerPoint presentation. **We also recommend that the first fifteen pages of text, mostly a recounting of recent history, be more thematic (tell a story) and be substantially condensed to just a few pages.**

To get a sense of the potential scope for tightening up the report, our sense is that the *Monthly Evaluation for Monetary Planning* for April 2012 effectively, begins on page 62! That is the first time the forecast is presented and discussed. This is followed by a discussion of inflation prospects relative to the Bank's inflation objective.

On a substantive note, we were struck that the words "full employment" never appears in the discussion in this report. It seems natural for policymakers in a "flexible inflation targeting" central bank to recognize full employment as at least a secondary goal relative to its inflation objective. To the extent that this is true, policymakers must monitor actual employment relative to an estimate of full employment. We would hope that such estimates and the corresponding discussion of labor markets would receive more attention in future briefing books.

Following the changes suggested above, the report could be condensed from 80 pages to about 20 pages, making it more readable, more focused, and more useful to policymakers.

Forecast Process

Preparing and presenting the staff forecast to the Monetary Policy Committee is the most important task of the Macroeconomics and Policy Division. We view the process as being excellent, notably inclusive with an opportunity for everyone in the department to attend a meeting where they can comment on the initial forecast, while putting the forecast, in the end, in the hands of a small team. We also think that the mix of current data analysis, Nowcasting, the use of a range of models, and informed judgment constitute a healthy mix of inputs into the policy process.

The procedure in the Macroeconomics and Policy Division appears to us to be excellent and, indeed, best practice. It is, by the way, almost identical to the process at the Federal Reserve Board. The first step is a quick look at some preliminary model runs to set the issues and give a feel for what has changed.

A central requirement is that the judgmental forecast be internally consistent. Models ensure that. Judgmental forecasters, therefore, have to, in effect, operate like a model, iterating their way to consistency. After the first round of making the judgmental forecast, including real, inflation, and financial variables, a second round of the judgmental forecast is undertaken to make sure that the judgmental forecast is internally consistent. If not, further iterations may be required.

Next, and this is an important complement, the judgmental forecast is “imposed” or “forced” onto the DGSE model. At this point, there is another check for internal consistency, making sure that the deviations of the judgmental forecast from the model forecast (in effect the pattern of model errors with the judgmental forecast forced onto it) look reasonable. At this point, there is an opportunity for further judgmental adjustments.

The same process take place at the same time and in the same way for the policy rate to assure both that the rate path is consistent with the forecast and the forecast with the rate path.

Otherwise, the DSGE model is only used for running alternative scenarios. For both its role in ensuring internal consistency of the judgmental forecast and its central role in running alternative scenarios, it is essential that the Bank’s DSGE model is and remains “state-of-the-art.” The staff is very committed to doing so, but says that the model today is not “state-of-the-art.” To bring it to and keep it at that level, the work plan has to devote sufficient resources on an ongoing basis. We discuss specific shortcomings in the section below evaluating research at the BOI.

We recommend that the department devote sufficient resources to ensure that model builders in the department have the time to keep the staffs’ DSGE model in line with the state of the art, extending it as research on DSGE models proceeds. We also recommend that staff members, who work on model development or use the model to run alternative scenarios, visit other central banks. One leader in this area among relatively small open economies is the Bank of Canada who uses a DSGE model both to make its forecasts and consider alternative scenarios. The DSGE models maintained by central banks in other small open economies provide further benchmarks for the Israeli model. Finally

it should be said that the Fed is undeniably at the frontier of using DSGE models for forecasting and for scenarios analyses.

When the BOI began its effort to build a DSGE model, it brought in outside experts to teach a course and jump-start the process. Our understanding is that the experiment was viewed as a success. It is time to revisit that process to jump-start the effort and bring the BOI's DSGE model closer to the frontier. **Accordingly, we recommend that the Research Department bring in consultants to help the staff extend the model to be as well designed as possible for providing prescriptions for the path of the policy rate in response to alternative scenarios.**

We take it as given that the BOI should try to remain at the forefront of central banks in the development and use of DSGE models. Still there remains some skepticism, even among those who work on the DSGE model, that this class of models should be the only quantitative model used in the policy process. It may be that at some point DSGE models will completely take the place of macro-econometric models, such as FRB-US at the Board. We suspect that the transition period will be of substantial length. Some researchers at the BOI would like to develop an empirical macro-econometric model, in the spirit of FRB-US, and use both models during the transition period. **We recommend that management and the staff with expertise in modeling discuss the costs and benefits of building and analyzing an empirical macro-econometric model of the Israeli economy.**

IV. Research

At the Bank of Israel, as at most central banks, there is a distinction between two types of research, referred to at the Bank of Israel as *short-term* and *long-term* research.

At the Bank of Israel, more so than most other central banks, *both* short-term and long-term research are expected to be policy relevant. Short-term research is a quick response to questions "from above," from the director of research, the division directors and policymakers themselves and is focused on answering questions pertaining directly to current concerns of monetary policymakers. Longer-term research at the Bank is also expected to be policy relevant, though perhaps only *potentially* policy relevant, and is more self-directed. By this we

mean that it is conducted more at the discretion of researchers, with less oversight from department management than shorter-term research.

We did not have the opportunity to read any of the short-term research commentaries, but all the topics appeared highly relevant to what policymakers should be thinking about and asking questions about.

Many central banks define long-term research (often referred to simply as “research”) as studies done in the Research Department that meet *academic* standards and, specifically, are intended for *publication in peer-reviewed international journals*. The quality of long-term research is typically measured by the *volume* of publications in such journals and the number of *citations* to that work in the same set of journals. The Bank of Israel does not share this definition of long-term research and the metric for assessing its quality. Long-term research is usually only published in discussion papers, or in, some cases, in Israeli journals with a limited readership. Researchers say that senior department management views a discussion paper as the “end product” of research in the department and that there is little incentive and even less time to pursue long-term research of journal quality.

It seems to us that there is a high return, on the margin, from encouraging more researchers to send their best work to good field journals. Some of the researchers that we spoke to voiced skepticism that mainstream journals would be interested in empirical work based on Israeli data. We don’t share this view. Indeed there are many examples of papers in the best journals that use data from small open economies. Our sense is that there are substantial, policy-relevant gains to the BOI of encouraging the staff publish more in mainstream journals. It would greatly enhance the ability of researchers to be invited to conferences where they would be exposed to leading work at other central banks, policy institutions and universities. In addition, researchers would be more likely to develop relationships with first-rate scholars and practitioners, who might then be more likely to visit the BOI and work on problems that are relevant to the BOI. Given the paucity of applied work in Israeli Universities, developing such relationships would be a cost-efficient way of leveraging the limited resources of the BOI.

The Work Plan

It appears that the process of putting together the work plan is not fully understood by researchers. Senior managers, unit heads, and other researchers seem to have different perceptions about how the work plan is put together and how actual research is determined in practice.

The process by which the work plan is evolving as the new department director puts his imprint on the process. The process discussed below reflects how the work plan was developed last year.

The process begins with a meeting of the director of research and the two division heads. The division heads may have previously met with unit heads to get their input. Much of the work plan reflected last year's plan. This is natural since many of the projects are ongoing. An important impetus for the evolution of the plan is that senior management adds one or two new research questions during the process. Management should certainly continue this practice. **But we recommend that management should also actively assess which ongoing projects should be continued.** There will always be "vested" interests in continuing projects, but we believe the Director of Research ought to have the final word on these matters.

The next stage in the work plan process is a department-wide meeting to brainstorm research ideas for the work plan. Management then puts together a "list" of proposed projects in the work plan. This list is shared with the Governor who provides his feedback. Then the final list is prepared.

Unit heads are supposed to coordinate and monitor research with their units. In practice it is the division heads that do most of the monitoring. There are quarterly progress report meetings. In the end, some research is (really) self-directed and incorporated ad hoc into the work plan—though this is apparently limited to only one or two of the most productive researchers.

We recommend that the current process, (which effectively combining top down and bottom up input, but dominated from the beginning by the senior management of the Research Department) should remain the core of the process of developing the work plan. As emphasized above, the work plan will evolve under the new research director. Regardless of the exact outcome of the

process, it is extremely important that all relevant personnel understand how the research plan is to be developed and how research projects will be allocated to individual researchers.

We really like the department-wide brainstorming session. It allows researchers to have their voices heard and enables them to feel part of the process. Insights about research priorities that emerge from this meeting are given consideration by senior management. However, some researchers said they never saw the “list” and that, in the end, it was not published. **We recommend that researchers see the tentative list before the brainstorming meeting and that the final list be published.**

The Quality of Research

We found the quality of research at the Bank to be very good, though, virtually by design, not as high as other central banks that have more competitive compensation and measure the quality of research by academic standards. **We recommend that policymakers and department management show more appreciation of high-quality work and provide additional concrete incentives, including financial incentives, for researchers to produce such work.**

In assessing the quality of research papers, the committee takes as given the stated policy of the BOI that all research should be policy relevant. In judging policy relevance we take a broad view that encompasses the BOI’s primary mission of conducting monetary policy as well as its role in providing advice to the government on economic policy.

The committee read over thirty papers written in English, and a small number of papers written in Hebrew. The papers fall into seven broad categories.

1. Category one includes relatively non-theoretical time series papers aimed at assessing the effects of shocks to the Israeli economy.
2. Category two consists of papers in which structural models of the Israeli economy are used to assess the impact of shocks to the economy and to conduct policy relevant experiments. Included here are papers that study issues like the impact of shocks to the financial sector, export demand and the effects of various fiscal policy experiments.

3. Category three consists of papers that study inflation expectations and investor behavior.
4. Category four includes papers that assess the performance of different sectors of the Israeli economy, such as labor markets and the education sector.
5. Category five deals with long-run trends in the real side of the Israeli economy, with emphasis on investment and productivity.
6. Category six consists of papers describing aspects of the BOI's DSGE model.
7. Category seven deals with high frequency assessments of the Israeli economy, so-called 'Now-casting' and forecasting exercises.

The vast majority of the papers that we read are policy relevant. Some of the papers like those falling into categories one, three and seven are directly geared at short-run monetary policy. Other papers like some of those falling into categories two and six are policy relevant in the sense of developing better models for use in the monetary policy process. Finally, papers falling into category four and five, as well some papers in category two are highly relevant to the BOI's role as economic advisor to the government.

We are impressed by the fact that an important subset of the papers, especially in categories three, four and five, use large and detailed data sets on outcomes from the non-financial and financial side of the Israeli economy. The value added of these data sets is particularly high when the formal econometric analysis is supplemented with descriptive analysis that includes relevant institutional detail. The importance of the expertise gained on the Israeli economy in the course of such exercises is especially important for the central bank staff of a small economy in which the academic sector tends to specialize in non-applied topics.

Our overall impression is that the research quality is reasonably high on average, even if there is (inevitably) significant variation across different researchers. Very few of the papers make significant methodological contributions per se. But many of them apply close to state-of-the art methods to study policy-relevant aspects of the Israeli economy.

We are concerned that some topics are not receiving as much attention as one might have expected. For example, there seems to be relatively very little work on incorporating financial frictions into the BOI's DSGE model. This type of effort has

been a focal point of work at many central banks, as well applied macroeconomic groups in academia. This effort reflects a consensus that mainstream DSGE models developed prior to the financial crisis must be extended to allow for richer interactions between financial and real sectors of the economy. Otherwise they will become of limited use in the policy process. This limitation will become particularly salient to the extent that the BOI devotes more attention to the area of financial stability and macroprudential regulation. In light of these considerations we recommend that the BOI critically re-evaluate its efforts to stay near the frontier of the new generation of DSGE models.

We also noticed that there was relatively little work on open-economy macroeconomic models. This fact struck us surprising in light of the structure of the Israeli economy. In addition we were struck by the fact that very little effort is being devoted to long-run growth models that would be useful to the BOI's in its role as advisor to the government.

As a final note, it is worth emphasizing the obvious energy and devotion of the staff. That said, many of the researchers are quite young and inexperienced. Under these circumstances, it is especially important for management to take an active, if gentle, hand in setting priorities for the group and providing feedback to researchers. Budget realities being what they are, hard choices have to be made. However, they should not be made by default.

Constraints and Impediments

Some constraints on and impediments to research are inevitable. But others are avoidable. These types of constraints and impediments are particularly frustrating to researchers, as they unnecessarily reduce the quality of life in the department, lower the productivity of researchers, and negatively impact the quality of research.

The research group of the Bank of Israel will always be small. The small size inevitably means less opportunity for collaboration within the Department. Since researchers in a small department are always relatively isolated, it is important to take advantage of opportunities to alleviate the problem. **The committee recommends that further energy should be devoted to increasing**

the amount of contact between BOI staff and outside researchers. One avenue would be to increase the number of seminars given at the BOI by outside researchers. An important impediment to this strategy is the paucity of applied macroeconomic research at Israeli universities.

That constraint implies that more effort should be devoted to interacting with researchers *abroad*. We understand there are administrative obstacles to bringing in “consultants”, here meaning academics that come in for one day a week, or more realistically for a week. **We recommend that the Bank administration work to remove these obstacles, regardless of whether the consultants are Israelis or foreigners.**

We also recommend that management carefully consider different strategies for bringing in outside experts. Such strategies could include inviting co-authors to visit together, organizing conferences with other central banks and universities, and co-operating with Israeli Universities who might be interested in inviting macroeconomists from abroad.

Consultants can play a number of useful roles. One key role is to provide advice on the research carried out by bank staff. This mentoring role is especially relevant for the Bank of Israel, since there are relatively few senior researchers on the staff and a large number of early-stage researchers. A second key role is to directly conduct research that is useful to the bank. This research can include collaborative work with bank researchers. However, it can also include stand-alone projects. The latter can be especially useful and efficient in topic areas where the Bank lacks specialized expertise. Importantly, we would not impose a requirement that research be jointly conducted between a consultant and a staff member. Only “unforced” collaborations are likely to be productive.

It is critical to reward promising researchers, allow them to improve their skills, expose them to cutting edge research and provide them with networking opportunities. **Accordingly, we recommend that the Bank provide more encouragement to researchers to attend conferences and attend courses abroad.** Examples of the latter include courses offered by the American Economic Association, the National Bureau of Economic Research and summer schools such as those organized by CEMFI (Madrid) and the Barcelona Graduate School of Economics.

In addition, we recommend that the Bank encourage senior managers and researchers to visit research departments at other central banks. The Bank should also invite researchers from other central banks to visit for perhaps a week, giving seminars or work with researchers at the BOI who are focused on similar topics. Longer-term secondments should also be encouraged. For instance, research staff at central banks in other small other economies (such as New Zealand and Norway) are encouraged to take external assignments for extended periods. Similarly, staff in Eurosystem central banks may gain external experience through assignments at the European Central Bank.

Researchers complained about constraints on their ability to do research. We already noted widespread dissatisfaction with the state of support from IT, complaints about insufficient access to MATLAB, an important program for researchers, and frustration at the inability to use SKYPE, an extremely cost efficient way of working with domestic and foreign co-authors. Indeed, researchers told us that they couldn't even make international calls from the Bank. This prohibition powerfully reinforces the staff's isolation and restricts their ability to co-author papers with academics abroad. Finally, the staff complained that, in practice, the Bank's security filters trap some of the emails from abroad.

We recommend that the Director of Research and relevant staff meet with the personnel from IT to eliminate or mitigate the aforementioned impediments to research.

Finally, to their great credit, many researchers told us they want to work at home after a day's work at the Bank. This venue for work is particularly important for long-term research. Unfortunately, researchers report that there are important obstacles to working outside the BOI. The key issues here are the inability to download files on the Bank's systems, access to data and accessing emails sent to their Bank address. **We recommend that Bank management work to eliminate or mitigate these impediments to the staff from working at home.**

Too Many Meetings?

A common concern of senior managers is the number of meetings they must attend outside the Research Department. **We recommend that the Governor**

meet with Department managers to discuss ways to limit their participation in Bank committees so that they can focus on their primary job: managing the Research Department.

V. Financial Stability

When the new Financial Stability Division is up and running, the Director of Research will have to work with the director of the new division to decide which researchers should be moved from the other divisions in the Research Department, principally from the Monetary and Finance Division. It is essential that Bank management encourages and monitor cooperation between the new division and the Supervision and Market Operations Departments. Some tensions here are inevitable because of the overlap in responsibilities.

A number of central banks monitor financial markets, property markets and financial institutions for threats to financial stability. This exercise is critical for making sound recommendations for macroprudential policies. **In setting up the new Financial Stability Division, the Bank of Israel should build on the growing body of expertise provided by other institutions. We recommend the following process. First, management needs to develop an initial tentative plan for how the new division will function. This plan should recognize the institutional realities of the Israel financial system. Second, the Director of Research and the director of the new division should visit foreign institutions to seek input on how the new division should be organized and what basic tasks it should focus on. In addition the bank should establish ongoing links with foreign institutions to hear, on ongoing basis, their views about global threats to financial stability and ensure that the Bank of Israel is close to the “state-of-the-art” with respect to monitoring such threats and developing recommendations for macroprudential policy. Obvious focal contacts for the Bank of Israel include the BIS, the Federal Reserve Board, the U.S. Treasury, the Bank of England and the IMF.**

V. The Bank's Government Advisor Role

We came to the Bank very skeptical of any central bank having the responsibility of being an adviser, much less *the* advisor, to the government on economic policy. We expected to find discontent within the staff about having to devote resources to such non-traditional central bank research. We found just the opposite. Researchers are totally committed to this work. Indeed they are of the view that it is vital that the Bank play this role. The reason is simple: there is simply no other institution in Israel that can do so. There is no analog to U.S. governmental institutions like the Congressional Budget Office or the Joint Tax Committee. Government agencies have very few researchers, and virtually none with the capability of the Bank staff. At the same time there are no private think tanks like the Brookings Institute that regularly evaluate government policies. Finally, there are relatively few applied macroeconomic researchers at Israeli universities whose independent expertise the government can draw upon.

Many government officials expressed how important it is that the Bank offer an independent view of proposed policies and an assessment of the effectiveness of current policies. It is widely appreciated that the Bank supports its views with analysis and empirical work. We were told that at the higher levels of government agencies, there is less sympathy with the Bank taking a different view and supporting that view so capably. This reaction highlights the potential dangers to the Bank of weighing in on matters not centrally related to monetary policy. But it is also a testimony to the contribution of the Bank to government policy. Absent fundamental changes in other Israeli institutions, we agree that the Bank must continue to play the critical role of advisor to the government policy.

The Work Plan

We were asked to investigate how research related to the Bank's role as economic adviser to the government is determined. Various government-based individuals told us that there is not enough interaction with government officials to enable bank management to understand the government's research priorities. In contrast, individuals at the Bank told us that the Bank "knows" what the government wants and takes the initiative to work on such topics.

In practice, many research topics come from the participation of staff and policymakers on committees that include a wide range of other government officials. Government officials found the Bank's participation, most of the time, extremely valuable and applauded its contribution. But we also heard complaints that the quality of the work at the Bank is uneven and that there are important gaps with respect to areas that are of particular importance for government decisions and longer-term planning.

There is clearly some tension here that needs to be resolved. Given the Bank's limited resources it is critical to receive systematic input from government officials about their priorities as part of the process by which the research department's work plan is put together. The process by which input is provided should be formalized. It is critical to convey to government officials the amount of resources that the Bank can devote to its role as economic advisor. Doing so will help set expectations at realistic levels. Moreover, it will help government officials internalize those constraints when they approach the Bank for assistance.

At the same time, there should be a limit to how much "direction" the Bank should accept from government officials. To retain its role as an independent adviser to the government, **we recommend that the Bank continue to initiate research mostly on its own and to weigh in on what *it* thinks are the most important policy questions. Accordingly, it would be useful for official interaction with government officials on the issue of setting research priorities for the Bank's role as economic advisor to occur on an annual basis only. These interactions should occur at the time the Research Department's work plan for government related research is being developed.**

Coverage

Current and former government officials pointed to a wide range of areas that the research department covers inadequately. Examples cited include health, education, labor markets, environment, and infrastructure. The committee hesitates to recommend that the Bank move in the direction of filling these gaps. The department simply does not have the resources to do so. To expand coverage, the Bank must decide that other areas, which it does cover, are of lower priority. Alternatively, the research staff must be sufficiently expanded to take on new tasks. The committee recommends that the Research Department, in conjunction

with the Governor, form an explicit judgment about how much time it should allocate to its role as economic advisor to the government. This judgment should recognize potential synergies between research directed to fulfilling this role and research related to monetary policy.

One issue that came up in our interviews with government officials is that the Department does not have a model of long-run growth. In many cases the most important of policies are related to long-run growth rates and the level of potential output. Examples include policies impacting on education, infrastructure and taxes. The absence of a model that can address the effects of policies on growth severely impacts the ability of the Bank to fulfill its role as economic advisor to the government. We understand that work on developing a long-run growth model has begun. But it has not been completed because of other priorities of senior department management, including current analysis and short-term research. **The committee recommends that management consider including in the work plan resources to complete the development of a long-run growth model. We also recommend that the Research Department consider bringing in foreign experts to work with the staff in order jump-start the process and ensure that the growth model is close to state-of-the-art.**

VI. Support of Policymakers

The fundamental task of the Research Department is to provide support for monetary policymakers, including, most importantly, the development of the staff policy recommendation.

The process of the development of the staff policy recommendation can be described as follows. First, early in the month, there is a meeting that includes staff assigned to preparing the monthly materials (specifically the *Monthly Planning Evaluation Document*), division heads and unit heads. The meeting is devoted to special issues that the department wants to raise for the coming MPC meeting, including, of course, new key developments and any new staff forecast. Second, a draft of the *Monthly Evaluation for Monetary Planning* is circulated to the department. Third, a department-wide meeting is held where researchers have an opportunity to emphasize issues they are concerned about and give their recommendations. Fourth, there is a meeting of division directors, unit heads in the Monetary and Finance Division, and advisers where recommendations are

offered to the Director of Research. Fifth, the Director, with the aid of the person in charge of the monthly preparation team, then writes a recommendation, including an explanation of how recent developments and other issues affected his conclusions. Sixth, the Director meets with the governor and deputy governor to see if there are any issues that have been overlooked. Finally, the director of research delivers his recommendation to the policy committee. This recommendation may not necessarily reflect the median view of department members. The recommendations are very much 'owned' by the Director of Research.

The committee believes the process of developing the staff policy recommendation is excellent. We are particularly appreciative of the fact that management enables all researchers to offer their own recommendations during the department-wide meeting. This broad discussion is an excellent complement to the more intense discussions about the policy recommendations, which are conducted within a small group of individuals.

VII. Hiring, Promoting, Incentives, Career Paths, and Compensation

There is widespread dissatisfaction with the process by which researchers are hired and compensation is arranged. If these functions are not significantly improved, there will likely be steady erosion in the quality of new hires. One main obstacle to hiring new economists is the two-tier compensation system that results in non-competitive compensation for new hires. Another important obstacle is that takes a very long time to make an official offer. The obstacles to hiring economists above the starting grade are almost as daunting.

Compensation

We were asked if the Bank is successful in hiring people of sufficient quality in the research department. Then answer is increasingly 'no'. Senior management sees this trend as inevitable, given the two-tier wage structure, and the non-competitive lower-tier compensation that the Bank is allowed by the government to offer. There is, we understand, little if anything the Governor can do to get government permission to raise lower tier compensation levels. **However, we**

recommend that the Governor take every relevant opportunity to convey the message to senior government officials that the current pay scale is leading to deterioration in the quality of the staff. Ultimately this deterioration will have a negative impact on the quality of research in Bank of Israel. That in turn will lead to deterioration in the ability of the Bank to fulfill its role as economic advisor to the government and executor of monetary policy.

Since the Bank probably cannot raise lower-tier compensation levels, it must look for other ways to attract and retain high quality researchers. One possibility is to give *substantial* bonuses to the most capable and productive researchers. Accordingly, **we recommend that the most capable researchers receive annual bonuses larger than is the norm under the current Excellence Awards.** If management insists on revenue neutrality, this proposal amounts to recommending that a smaller fraction of the staff receive a larger 'Excellence' bonus than is currently the case.

Promotion and career paths

The committee believes that the promotion process should be re-examined. This process is particularly important because new hires enter at low compensation levels. Inevitably there will only be a few managers in the department. There will be even fewer if our recommendations for reorganization are accepted. Promotion without becoming a manager is therefore the only way for most researchers to receive a substantial raise. Another benefit of promotion could be recognition by titles that confer higher status on the individual.

We recommend that the Department look for opportunities to accelerate promotions of the most capable researchers. It should use the new rank of Senior Researcher as a way of recognizing and financially rewarding the most talented researchers.

Face Time

The quarterly research forum is an excellent opportunity for researchers to interact with the Governor. Unfortunately participation is limited to only four to six researchers. **We recommend that senior department management, the Governor, and the Deputy Governor spend more time on the staff floor.**This

would be extremely helpful in maintaining morale, rewarding promising researchers and providing substantive intellectual input to the staff.

An excellent venue for doing so would be the department-wide meetings on the work plan. These meetings will provide the Governor and senior department managers with a direct opportunity to provide informal give-and-take feedback to the staff.

Another possibility for expanded contact between policymakers and researchers would be to introduce a regular “debriefing” after policy committee meetings, perhaps led by the Deputy Governor. Aside from the substantive benefits of such a meeting, it would increase the staffs’ sense of being an integral part of the policymaking process.

We also think it would be an excellent idea to initiate a monthly or quarterly lunch meeting between researchers and senior management, including the Deputy Governor and/or the Governor. During these meetings, staff could discuss their research, policy issues and other issues of concern.

Incentives

The Research Department should provide more incentives for high-quality work, especially long-term research that is published in international journals. As recommended above, the most important incentive is that active publishers are duly recognized in terms of the proportion of protected time that is allocated for long-term research. In addition, there should be a clear career path for those with a good publication record that does not require movement into management-type positions. **We also recommend that the Bank provide a direct monetary bonus for publications in peer-reviewed international journals.** Such incentives must be coordinated with the Excellence Reward program. We suspect that the proposed bonuses will be more effective at promoting high-quality long-term research than the Excellence Reward.

To provide further clarity in terms of publication expectations, the Bank should also adopt a journal ranking system, whereby publishing in higher-end field journals or general-interest journals receives greater credit than publishing in lower-ranked journals or book volumes that have little impact on the profession.

Such journal ranking systems have been successfully adopted by other central bank.

VIII. How Much Would It Cost?

We have not considered the cost associated with our recommendations. We are not in a position to do so, and we did not feel that was within our mandate.

Some of our recommendations involve increasing the effectiveness of management and the efficiency with which current analysis is conducted. But many of our recommendations do involve additional resources. The gains associated with our recommendations must, in the end pass a cost benefit threshold. Attracting and retaining high quality staff is costly. Whether it is worth doing this is a fundamental question that the government and Senior Bank Management must grapple with. Given the unique role played by the Bank of Israel in Israeli society, it is hard to imagine that they will conclude the cost is not worth paying.

IX. Summary of Recommendations

Specific recommendations appear throughout the report. Here we focus on broad themes and summarize our most important recommendations.

The over-riding challenge for the Research Department is to reconcile the heavy demands placed on the department with the limited resources at its disposal, particularly the small size of the staff. The challenge is to do so in a way that is consistent with the high quality of current analysis and research.

This challenge can be met with a combination of an increase in the productivity of the staff, a more judicious allocation of resources across tasks and an increase in resources devoted to the Research Department, including an expansion in the size of the research staff.

Increasing productivity and improving the quality of output from existing staff depends critically on an appropriate organizational structure as well as clarity from management about its priorities and the standards expected of staff.

We recommend that the Department be reorganized to flatten the management structure by converting some of unit-head positions into an equivalent non-managerial rank and appointing deputy directors in each division. A smaller number of senior managers with clearer authority for oversight of researchers would be more effective than the current structure. It would also release resources for use in research.

Central banks around the world are placing a higher priority on the tasks of monitoring threats to financial stability and macroprudential policy. Like its foreign counterparts, the Bank of Israel recognizes **the growing importance of these tasks. To accomplish these tasks efficiently and effectively, we recommend that the Bank of Israel establish a new Financial Stability Division in the Research Department. As part of the process of designing this new division, the Director of Research, the Division director and relevant staff visit should visit foreign central banks, Treasuries and international financial institutions to observe how they organize their work on financial stability. In addition, the Bank of Israel should establish ongoing links with foreign institutions to hear their views about global threats to financial stability and ensure that the Bank of Israel is close to the “state-of-the-art” with respect to monitoring such threats and developing recommendations for macroprudential policy.**

The new division must have resources commensurate with the importance of its task. These resources are needed to hire new staff with expertise in finance, enhance their training in this new field and provide the new division with access to the data that it needs. Finally management must ensure that there is collaboration and coordination across the Departments with overlapping mandates related to financial stability, specifically the Department of Bank Supervision. To facilitate such collaboration and coordination, we recommend that Financial Stability “team” be established. This team would include staff from the Financial Stability Division of the Research Department, the Bank Supervision Department, and the Market Operations Department.

We recommend that the research on forecasting and model development be consolidated in the Macroeconomics and Policy Division. Since researchers in the Monetary and Finance Division will continue to make a contribution in both areas, we recommend that teams be established in each area, drawn from staff

in the two divisions, to coordinate current analysis and research and foster collaboration on forecasting and model development.

At present, staff from the Market Operations Division presents the global outlook to the Monetary Policy Committee. **We recommend that all work related to forecasting the Israeli economy should also include the global outlook.**

Research Department management sets priorities about how researchers allocate their time across three tasks: current analysis, short-term research, and longer-term research. In all cases research should be policy related. **We recommend that all staff do some current analysis and some research. However the fraction of time devoted to different tasks should vary across researchers. These fractions should reflect talent levels and the comparative advantage of staff members. The most talented researchers should be given protected blocks of time for uninterrupted research.**

At present there seems to be a divergence between priorities-in-principle and priorities-in-practice (half to current analysis and half to research, with the latter being concentrated on short-term research). **Department and Bank management should either agree to make the priorities-in-practice the official policy of the Department or expand the staff to allow current priorities-in-practice to be aligned with the current priorities-in-principle.**

In either case, priorities should apply to the Department in general, but not to individual researchers. **The committee recommends that priorities vary for individual researchers, with a larger allocation for the work that each researcher excels at.**

The Bank of Israel plays two key roles. The first role is that of traditional central bank which conducts monetary policy decisions and bank supervision. The second role is adviser to the government. **We recommend that the senior management be clear about its priorities and should decide explicitly on the fraction of resources of the research department that should be allocated to supporting the Bank's in its traditional role as a central bank and its non-traditional role as economic advisor to the government.**

To facilitate the development of the work plan for research related to its government adviser role, we recommend that senior management organize and institutionalize an annual discussion with government officials to better understand the policy issues that are most pressing for the government. However, to retain its role as an independent advisor we recommend that the Bank continue to initiate research mostly on its own and to weigh in on what it thinks are the most important policy questions.

The process of developing the annual work plan regarding monetary policy related topics is sound in principle. However, we have recommendations about practical aspects of the process. As is the current practice, all researchers should have an opportunity to contribute to the development of the work plan. But management should ensure that the staff fully understands the process, the Department's priorities and the research priorities of individual researchers. In addition, we recommend that managers more effectively monitor ongoing research to ensure that actual research remains aligned with the Department's annual work plan and staff-specific plans.

A time consuming and important task for Department staff is the preparation of internal memos for policymakers and external reports for the public. We believe there are opportunities to economize on the resources devoted to writing these reports, while at the same time, improving their quality, their usefulness to policymakers, and their accessibility to the public.

We recommend that the Department consider dropping *Current Economic Developments*; if continued, we recommend that it be released less often, that overlap with the *Annual Report* and the *Monetary Policy Report* be avoided, and that its content be rethought. We also recommend that the Department reduce the resources devoted to writing the *Annual Report*. This document is extraordinary and useful to a wide segment of Israeli society. But at present, it requires an enormous amount of resources to produce that is too large relative to the other conflicting demands placed on the staff. We recommend that the *Monetary Policy Report*, which is delivered to the Knesset ahead of the Governor's testimony twice a year, be "owned" by policymakers, in practice as well as in principle. In addition this report should be more thematic and forward-looking. Finally, we recommend that the *Monthly Evaluation for Policy Planning*, the most important staff memo prepared for policymakers, be

completely overhauled to make it more useful to policymakers. To this end, it should be dramatically shorter and more forward-looking.

Models are key analytical tools for researchers. It is important that the Department regularly assess whether its current models are at “state-of-the-arts” levels. **We recommend that the Department allocate resources on an ongoing basis to keep its DSGE model at a “state of the arts” level. Our sense is that the current DSGE model needs to be expanded to incorporate new developments in modeling the financial sector of the economy and macroprudential policy. These developments will require substantial resources and should be factored into the annual work plan, along with the corresponding resource commitments. We also recommend that the department consider developing two new models that would be useful additions to the Department’s analytical toolkit: an empirical macroeconomic model for Israel and a long-term growth model that would allow the Department to more fully analyze the long-run implications of proposed government policies.**

There will be steady erosion in the quality of researchers, research, and support to policymakers, if the Research Department does not improve its ability to hire and retain talented researchers. The most important impediment to doing so is the low, uncompetitive level of lower-tier researchers. An additional impediment is the amount of time it takes to make offers, in part because of the slowness of the internal tender process. This problem is especially important with respect to hiring and retaining senior researchers.

If the government does not allow a higher compensation scale for lower-tier researchers, management must find other ways to reward outstanding staff. **We recommend that the Bank continue to offer bonuses to the most talented younger researchers; accelerate their promotion without requiring them to take on management responsibilities; provide additional resources for outstanding staff to attend conferences and visit other central banks; set expectations that the staff publish research in peer-reviewed journals and reward for them doing so; allow the most talented researchers more time for self-directed long-term research and show in concrete ways appreciation for the quality of staff work. One important way for senior management to show such appreciation is to actively interact and give staff feedback on their research.**

Due to the Department's small size, there are limited opportunities for staff to collaborate with researchers working on similar topics. Partly because of the size of the Department and partly because of paucity of applied research at Israeli Universities, researchers at the Bank are too isolated. This isolation is a threat to the staffs' ability to develop its human capital, build state of the art models for forecasting and policy analysis, and to provide a level of support to policy makers is at "state-of-the-art" level.

To compensate for the isolation of researchers, we recommend that senior managers and staff develop relationships with researchers at other central banks and invite researchers from other central banks to visit the Bank of Israel on a regular basis. In addition, Bank management must find ways to overcome administrative impediments to hiring consultants. Given the nature of research at Israeli Universities, the Department must invite more researchers from abroad to give seminars, mini-courses, and collaborate with researchers at the Bank of Israel. In addition the Department should provide more encouragement for its researchers to attend conferences and courses abroad.

We conclude by emphasizing how much we enjoyed visiting with researchers, Department management and policymakers at the Bank of Israel. The Bank of Israel has every reason to be proud of its Research Department, its managers and researchers. We are also deeply impressed with the unique role that the Bank of Israel plays in Israeli society. We hope that our discussions with researchers, Research Department management, and policymakers and the recommendation in this report contribute to maintaining the Bank of Israel as a highly respected member of the central banking community, as an important contributor to effective government policy, and as an asset to the state of Israel.