



Technical Assistance Report

Project Number: 47146-001
Research and Development Technical Assistance (RDTA)
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Macroeconomic Modeling for Improved Economic Assessment

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
ADO	–	Asian Development Outlook
DMC	–	developing member country
ERD	–	Economics and Research Department
ERMF	–	Macroeconomics and Finance Research
FPP	–	financial programming and policy
GPM	–	global projection model
TA	–	technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION

Type	–	Regional—Research and development technical assistance (RDTA)
Targeting classification	–	General intervention
Sector (subsector)	–	Multisector (economic and public affairs management)
Themes (subthemes)	–	Economic growth (promoting macroeconomic stability), regional cooperation and integration (trade and investments, money and finance), capacity development (institutional development)
Location (impact)	–	National (high), regional (high)
Partnerships	–	International Monetary Fund, Asian Monitoring and Research Office

NOTE

In this report, "\$" refers to US dollars.

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I. INTRODUCTION

1. Given its mission to serve as a partner and an agent for change in Asia and the Pacific, the Asian Development Bank (ADB) must continue expanding its role as a knowledge bank that provides quality policy dialogue on important economic issues and policies to its member countries. The recent dynamics of a more rapidly changing global and regional economic environment demands that ADB strengthen and advance its economic assessments and policy recommendations to ensure relevance.

2. Previous efforts by ADB's Economics and Research Division (ERD) to enhance macroeconomic assessments resulted in several tools to assess different components of macroeconomic development. The tools are still used to analyze macroeconomic situations independently, based on specific needs. This research and development technical assistance (TA) seeks to provide a structured approach to macroeconomic modeling and economic assessments that can readily consider changing conditions while considering available country information. By providing up-to-date economic analysis, ADB is expected to be able to influence economic and policy dialogue within the organization and in its developing member countries (DMCs). The design and monitoring framework is in Appendix 1.¹

II. ISSUES

3. Strategy 2020 identifies inclusive growth as one of five key priority research areas.² Economic growth is necessary to bring about inclusiveness. However, rapid changes in the global economic environment often disrupt the pattern of economic growth needed to bring inclusiveness. To prevent and/or mitigate such disruptions, a better understanding of growth, its drivers, and constraints is required. Continuous monitoring of major macroeconomic issues and trends to analyze their implications for economic growth is an indispensable component of the effort. The TA will address the issue by enhancing the capacity to conduct better forecasting and analysis of key macroeconomic variables.

4. The conduct of a proper macroeconomic assessment should rest on three important pillars: (i) provision of reasonable short- to medium-term forecasts for key macroeconomic variables of global and regional economies, (ii) consistency among the forecast figures within the setting of an aggregate economy, and (iii) ability to monitor potential changes to the forecast profiles based on unfolding developments in the economy.

5. In 2008, ERD's Macroeconomics and Finance Research Division (ERMF) established the interdepartmental Regional Economic Outlook Task Force to provide a forum for the regular exchange of information on countries and the external environment to better assess economic conditions of each country. Continued subscription to the 5-year global forecasting model of Oxford Economics enabled assessment of particular global and regional macroeconomic risks.³ However, volatile economic conditions since the global financial crisis require other tools for the conduct of economic analysis to capture changing economic trends.

¹ The TA first appeared in the business opportunities section of ADB's website on 27 November 2013.

² ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

³ Oxford Economics provides global forecasting and quantitative analysis for business and government. <http://www.oxfordeconomics.com/>

6. In 2011, ERD implemented a TA project on strengthening economic assessment capacity for Asia and the Pacific. It introduced a tool to ensure consistency among forecast variables for individual member countries, and studied the global projection model (GPM) to generate a multiregional economic assessment useful for global projections and policy analyses.⁴ ADB's *Asian Development Outlook* (ADO) publications have benefited from scenario analyses using the earlier versions of the GPM, while a few DMCs have initiated development of financial programming and policy (FPP)-related databases for their own economic assessments.

7. The current TA will reinforce ADB's macroeconomic assessments and sustain the gains and deepen the lessons from the 2011 TA by improving the production of reliable assumptions about how the global economy evolves and maintaining consistent forecasts for key macroeconomic variables for regional economies. In addition, the TA will establish a tool for monitoring analysis of selected economies in the region to reflect the rapidly changing economic environment. It will improve the quality of ADO publications as it reinforces the conduct of regional economic assessments within ADB and promotes deeper understanding of macroeconomic changes and policy linkages. The TA will then enhance the quality of policy dialogue between ADB and its member countries on important economic issues and policies.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

8. The TA impact will be an improved policy dialogue environment with the DMCs. This will be done through improved assessments of current macroeconomic situations, which will allow for better judgments in deriving policy alternatives.

9. The outcome will be that more timely macroeconomic policy assessments inform more relevant policy advice to DMCs. The macroeconomic monitoring and analytical tools for major industrial economies and selected DMCs produced under the TA will allow for a better evaluation of macroeconomic forecasts that underlie policy recommendations for the DMCs.

B. Methodology and Key Activities

10. The TA has three key outputs.

11. **Output 1: Reasonable short- to medium-term forecasts provided for the global economic environment.** The forecasts are to be used as global baseline scenarios in the ADO and other relevant publications. To achieve this, ADB will pursue a partnership with the International Monetary Fund to continuously improve the regional model used to assess trends in the global economic environment—the GPM-7—to suit internal ADB needs.⁵ In addition, ADB will maintain its membership in the GPM network to retain the venue for exchanging views about

⁴ ADB. 2011. *Technical Assistance for Strengthening Economic Assessment Capacity for Asia and the Pacific Region*. Manila (TA 7905-REG, approved on November 2011).

⁵ The TA for strengthening economic assessment capacity for Asia and the Pacific (footnote 4) contributed in developing a regional model called the GPM6+commodities, which was extensively used in the production of past *Asian Development Outlook* volumes and is currently used to generate global forecasts by the GPM network. The GPM6+commodities model divides the global economy into six regions (emerging Asia, Euro area, Japan, Latin America, the United States, and the rest of the world) plus an explicit block that models the global commodity market. The current TA extends the GPM6+commodities model by separating the People's Republic of China from the emerging Asia block in the model—GPM-7—and will calibrate the model to become a platform to generate global forecasts that suit ADB needs.

the latest trends in the global economy with various leading institutions around the world and to access the GPM. Co-hosting one GPM conference to be attended by international finance institutions and central bankers will be explored.

11. **Output 2: Consistent forecast figures for the DMCs ensured.** Adoption of the FPP framework will provide growth, inflation, and current account forecasts that are more consistent with individual country economic variables and with the global baseline assumptions produced by the first output. This will enhance economic assessments completed by ADB operations departments that feed into the country strategy programs and country notes.⁶ The first two outputs will further the gains from the 2011 TA (footnote 4) by deepening knowledge on the regional model and the FPP framework, and integrate them into ERD and ADB operations.

12. **Output 3: Tools to monitor macroeconomic developments and analyze potential changes to ADB forecasts established.** These will be based on the most recent data releases and be useful for evaluating policy recommendations cited in ADB publications, such as the *ADO*. As outputs 1 and 2 activities produce forecasts for the selected DMCs, output 3 will be complementary by providing a framework to assess the likelihood that the forecasts will be realized as more data become available. For this TA, DMCs in Southeast and East Asia will be selected as pilot cases to demonstrate the development of the monitoring tool and its utility for economic assessment and updating of forecasts.⁷ The DMCs will be selected during TA implementation based on the relative availability of economic data at the desired frequency. At least one Asian Development Fund eligible country belonging to Group A or B will be included in the TA. In addition to selected DMCs in Southeast Asia, coordination with the regional departments through the Regional Economic Outlook Task Force will ensure complementarity of efforts.

13. Trainings, seminars, and conferences will be conducted to disseminate and test the TA results. Participants will include representatives of ADB resident missions and regional departments, and possibly some economists from the DMCs. To the extent possible, ADB staff will participate in external forums and conferences as resource person(s) to contribute to global practices and enhance ADB's visibility as a knowledge bank.

14. The TA assumes that several *ADO* country authors from resident missions and operations departments have sufficient understanding of the Excel-based modeling tool (FPP) and that sufficiently frequent, accurate, and up-to-date data are available in the selected DMCs. The key risks are that some selected DMCs will have insufficient high-quality data requiring further processing to make them consistent for analytical use, and that over time changes in statistical methods and/or measurements adopted by countries may require monitoring tools to be reassessed.

⁶ The TA for strengthening economic assessment capacity for Asia and the Pacific (footnote 4) initiated the construction of the FPP-formatted databases for four DMCs—the Philippines; Sri Lanka; Taipei, China; and Viet Nam. The current TA aims to complete these databases and add a database for at least two additional DMCs each year.

⁷ Countries in these subregions were also chosen as pilot cases in view of a possible partnership with the ASEAN+3 (Association of Southeast Asian Nations, the People's Republic of China, Japan, and the Republic of Korea) Macroeconomic Research Office, which is conducting high-frequency economic monitoring activities in these subregions. Once the tools are operating, extension for applications to other DMCs can be considered.

C. Cost and Financing

15. The TA is estimated to cost \$700,000, which will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-V). The cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

16. ADB will be the executing agency, with ERMF as the focal point. The TA will be implemented from 1 January 2014 to 31 December 2015. ERD will cooperate with the International Monetary Fund to develop baseline scenarios for the global projections; and with regional departments and resident missions to formulate the economic assessments, short- to medium-term forecasts, and Excel-based monitoring tools. Cooperation with the ASEAN+3 Macroeconomic Research Office for selected countries in Southeast Asia will also be explored (footnote 7).

17. The TA will require 18 person-months of inputs from international experts in economics and 36 person-months of inputs from national consultants to contribute to the development, monitoring, and updating of the baseline scenarios, economic assessment tools, and short- to medium-term forecasts. Up to six resource persons will be retained to act as trainers, facilitators, or lecturers during the training and seminars. The outline terms of reference for consultants and resource persons are provided in Appendix 3. ERMF staff are expected to participate in external conferences as resource persons to present the TA results to a wider audience.

18. ADB will engage consultants on an individual basis in accordance with its Guidelines on the Use of Consultants (2013, as amended from time to time). All procurement will be done in accordance with ADB's Procurement Guidelines (2013, as amended from time to time). Individual experts engaged for the 2011 TA to work on short- to medium-term forecasts and the FPP framework are expected to be engaged, subject to the normal competitive selection process. Experts for the third output will be sourced from reputable academic institutions in the DMCs. The team leader will act as head of the consultants for outputs 1 and 3, while another ERMF staff will be the team leader for the output 2 consultants.

19. All computer equipment purchased under the TA will remain with ADB for use in subsequent monitoring and database maintenance activities. A certificate of equipment turnover and/or disposal will be submitted at the end of TA implementation. The TA proceeds will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

20. ERMF will develop appropriate monitoring and evaluation tools to ensure that all consultants engaged perform their tasks as outlined in the terms of reference. Workshops will be conducted to review, evaluate, and discuss the initial monitoring tools and assessments prepared under the TA. Peer review of the working papers within ADB and in relevant international economic forums will be used to disseminate and evaluate the results of the TA.

IV. THE PRESIDENT'S DECISION

21. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$700,000 on a grant basis for Macroeconomic Modeling for Improved Economic Assessment, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact Improved policy dialogue environment with the DMCs.</p>	<p>At least 10 relevant policy documents (e.g., country strategy programs, policy briefs) make reference to the TA outputs by 2017 (baseline: 0)</p>	<p>ADO publication series</p> <p>Policy briefs</p> <p>Country strategy programs</p>	<p>Assumptions Accurate and up-to-date information is available for selected DMCs.</p> <p>Policy forums participated in by ADB officials influence DMC decision makers.</p> <p>Economic assessments are updated and communicated effectively.</p>
<p>Outcome More timely macroeconomic policy assessments inform more relevant policy advice to DMCs.</p>	<p>Forecasts for major industrial economies using the GPM-7 are used as the basis for economic analysis in ADO publications and other ADB documents by 2015 (baseline: 0)</p> <p>Economic assessments derived from monitoring tools are used to guide and evaluate forecasts and existing analysis for selected DMCs starting in 2015 (baseline: 0)</p>	<p>ADO publication series</p> <p>ADB documents</p> <p>Feedback from users of the FPP and monitoring tools</p> <p>Accuracy of forecast assessment relative to actual</p>	<p>Assumptions Accurate and up-to-date information is available for selected DMCs</p> <p>The regional departments continue support and cooperation in preparing, maintaining, and using the FPP worksheets</p> <p>Risk Changes in statistical methods and/or measurements may require revisiting of the monitoring tools</p>
<p>Outputs 1. Reasonable short-to medium-term forecasts provided for the global economic environment</p> <p>2. Consistent forecast figures for the DMCs ensured</p>	<p>At least four baseline scenarios for major industrial economies completed using the GPM-7 (baseline: 0)</p> <p>FPP-formatted databases completed for four DMCs where databases were started during the 2011 TA^a</p> <p>FPP-formatted databases completed for another four DMCs</p>	<p>ADO publication series</p> <p>ADO database</p> <p>Technical reports and working papers</p>	<p>Assumptions Engagement of consultants is timely.</p> <p>Good progress is made on developing the tools.</p> <p>Coordination with partner organizations is effective.</p> <p>Adequate staff time and resources are allocated to produce required outputs.</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks																		
3. Tools to monitor macroeconomic developments and analyze potential changes to ADB forecasts established	Usable tools to monitor macroeconomic trends based on the latest data releases		Risk Quality data is lacking, requiring further processing to make data consistent for use in the analysis.																		
Activities with Milestones		Inputs																			
1. Reasonable short- to medium-term forecasts provided for the global economic environment 1.1 Sign MOU with the International Monetary Fund and other partners (Jan–Apr 2014) 1.2 Fine-tune the GPM-7 and generate short- to medium-term forecasts (Q1 2014–Q4 2015) 1.3 Engage resource persons (Q2 2014–Q4 2014) 1.4 Conduct trainings and seminars (Oct–Nov 2014, Apr–May 2015, Nov 2015) 1.5 Participate in external seminars and conferences (Q3 2014–Q3 2015) 2. Consistent forecast figures for the DMCs ensured 2.1 Engage consultants and resource persons (Jan 2014–Apr 2014; Q2 2014–Q4 2014) 2.2 Develop and update FPP database (Q1 2014–Q4 2015) 2.3 Update forecasts (Q3 2014–Feb 2015, Q2 2015–Jul 2015, Q4 2015) 2.4 Conduct trainings and seminars (Oct–Nov 2014, Apr–May 2015, Nov 2015) 2.5 Document procedures for developing country-specific FPP databases (Q2 2014–Q5 2014) 3. Tools to monitor macroeconomic developments and analyze potential changes to ADB forecasts established 3.1 Engage consultants and resource persons (Jan2014–Q4 2014) 3.2 Develop assessment tools (Q2 2014–Q5 2015) 3.3 Update monitoring tools and forecasts (Q4 2014–Feb 2015, Q2 2015–Jul 2015, Q4 2015) 3.4 Document procedures in developing tools and write working paper(s) (Q3 2014–Q5 2014) 3.5 Conduct trainings and seminars (Oct–Nov 2014, Apr–May 2015, Nov 2015) 3.6 Participate in external seminars and conferences (Q1 2015–Q4 2015)		Asian Development Bank: \$700,000 (TASF-V) <table border="1"> <thead> <tr> <th>Item</th> <th>Amount (\$'000)</th> </tr> </thead> <tbody> <tr> <td>Consultants</td> <td></td> </tr> <tr> <td> International (18 person-months)</td> <td>276.0</td> </tr> <tr> <td> National (36 person-months)</td> <td>60.0</td> </tr> <tr> <td> Travel and per diem</td> <td>50.0</td> </tr> <tr> <td>Financing for seminars and conferences (includes resource persons and travel)</td> <td>125.0</td> </tr> <tr> <td>Financing for computer software and equipment</td> <td>5.0</td> </tr> <tr> <td>Administrative costs, data subscription, and contingencies</td> <td>184.0</td> </tr> <tr> <td>Total</td> <td>700.0</td> </tr> </tbody> </table>		Item	Amount (\$'000)	Consultants		International (18 person-months)	276.0	National (36 person-months)	60.0	Travel and per diem	50.0	Financing for seminars and conferences (includes resource persons and travel)	125.0	Financing for computer software and equipment	5.0	Administrative costs, data subscription, and contingencies	184.0	Total	700.0
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ADB = Asian Development Bank, ADO = *Asian Development Outlook*, DMC = developing member country, FPP = financial programming and policies, GPM = global projection model, MOU = memorandum of agreement, TA = technical assistance.

^a ADB. 2011. *Technical Assistance for Strengthening Economic Assessment Capacity for Asia and the Pacific Region*. Manila (TA 7905-REG, approved on November 2011).

Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Amount (\$'000)
Asian Development Bank^a	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	276.0
ii. National consultants	60.0
b. International and local travel	50.0
2. Equipment	5.0
3. Training, seminars, and conferences ^b	
a. Facilitators	100.0
b. Training program	25.0
4. Miscellaneous administration and support costs ^c	116.0
5. Contingencies	68.0
Total	700.0

^a Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-V).

^b Estimate for five workshops, including co-sponsorship of the Global Projections Model Conference in Asia. Includes travel expenses and per diem of ADB staff as resource persons or speakers in international conferences and/or forums to present technical assistance results; and honoraria, per diem, and travel expenses of other resource persons.

^c Includes subscription to the Global Projection Model Network and Haver Analytics for 2 years, communications, and others.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. **Economics consultants** (international, 4 person-months, up to two consultants). The consultants should have excellent knowledge and working experience in general macroeconomics and the use of the financial programming and planning (FPP) framework. Each economist should have (i) a doctorate degree in economics; (ii) expert knowledge of development issues in developing countries in Asia, preferably with 10 years of experience in the field of macroeconomics; (iii) proven capacity for quantitative and policy-oriented analysis; and (iv) proven capacity to synthesize complex issues and identify key policy messages for policymakers, development partners, and other stakeholders.
2. Under the direct supervision of the relevant Macroeconomics and Finance Research Division (ERMF) staff of the Asian Development Bank (ADB), the consultant will
 - (i) provide guidance to ADB staff and national consultants on the development of the FPP database given available macroeconomic data for selected developing member countries (DMCs);
 - (ii) participate in the workshops and training sessions organized under the technical assistance (TA);
 - (iii) together with ADB staff, document the procedures in developing an FPP database for each selected DMC; and
 - (iv) perform other related tasks as may be assigned by the ADB team leader.
3. Deliverables include procedures for developing an FPP database for selected DMCs, training materials, and FPP database development together with ADB staff and/or national consultants.
4. **Macroeconomic monitoring consultants** (international, 14 person-months, at least one consultant). The consultants should have (i) a doctorate degree (an advantage), (ii) substantive experience in analyzing macroeconomic developments, and (iii) proven capacity for quantitative and policy-oriented analysis of macroeconomic data and econometrics. Under the direct supervision of the relevant ERMF staff, the consultants will
 - (i) work with local consultants and ADB staff to develop appropriate macroeconomic assessment tools for selected DMCs;
 - (ii) together with ADB staff, demonstrate how such assessment tools could be used to analyze macroeconomic developments and update forecasts of selected DMCs;
 - (iii) together with ADB staff, document the procedures in developing the assessment tools;
 - (iv) present the results of this TA component through a working paper;
 - (v) participate in the workshops and conferences organized under the TA; and
 - (vi) perform other related tasks as may be assigned by the ADB team leader.
5. Deliverables include a working paper on the macroeconomic assessment tools for selected DMCs, and procedures in developing macroeconomic assessment tools.
6. **Research analysts** (national, 36 person-months, up to three consultants). The consultants should have excellent work experience in general economics. They must have Philippine citizenship, as they will carry out their assignment at ADB headquarters.

7. Under the direct supervision of relevant ERMF staff, the consultants will assist in the economic research work and undertake general macroeconomic research. In particular, the consultants will

- (i) work with the international consultants and ADB staff to develop appropriate economic assessment tools for selected DMCs,
- (ii) contribute to the preparation and updating of the FPP databases for assigned DMCs,
- (iii) support country economic assessments by gathering data and setting up databases for selected economies,
- (iv) support the documentation of procedures toward the development of FPP databases and economic assessment tools for selected DMCs, and
- (v) undertake ad hoc research and other assignments as may be assigned by the ADB team leader.

8. Deliverables include FPP databases for assigned DMCs and/or country databases for use as economic assessment tools developed under the guidance of the ADB team leader and/or international consultant.

9. **Resource persons** (10 days each, up to six resource persons). Under the supervision of the ADB team leader, up to six resource persons will be hired to participate in workshops and conferences. They should have knowledge of forecasting methods, where knowledge of the global projection model and/or the FPP would be an advantage, and extensive experience in macroeconomic monitoring and policy assessments.