

Hans Lofgren
July 20, 2009

PROGRAM NOTE:
DEVELOPMENT STRATEGY ANALYSIS WITH MAMS¹

The World Bank Development Economics Department (DEC) is engaged in a work program aimed at enhancing the analysis of strategies for achieving the Millennium Development Goals (MDGs) and, more broadly, policies for medium- and long-run growth and poverty reduction in developing countries. The program targets analytical practice both inside the World Bank and within the broader development community. At the core of the program is the development and application of a tool for economywide strategy analysis named MAMS (Maquette for MDG Simulations).

MAMS is a dynamic, country-level Computable General Equilibrium (CGE) model. It is designed to address, within a consistent and comprehensive framework, questions about the effects over time of different government and foreign aid policies on social and economic performance. The government policies that typically are considered include recurrent and investment spending in different areas (including education, health, and infrastructure) and policies for taxation and subsidies (including those related to foreign trade). Standard model-generated indicators of economic performance cover poverty and other MDG targets; growth in macro aggregates (private and government consumption and investment; exports; imports); macro balances (government budget, balance of payments); and the sectoral structure of production, employment, factor incomes, and trade.

Compared to other models of this type, MAMS is significantly extended to cover the processes that determine the MDGs and educational outcomes and their feedbacks to the rest of the economy. MAMS may also be run without the MDG module. The benefit of this is reduced and more flexible data requirements – the database for a macro-oriented version can quickly be put together from readily available data sources. This benefit comes at the cost of excluding analysis of most MDG issues.

The rest of this webpage provides an overview of the work program – background, summary of activities undertaken, and appendices that credit the contributors to the program and list project outputs and activities in chronological order.

BACKGROUND

¹ We gratefully acknowledge support for this work from the Knowledge for Change Program (KCP) Trust Fund through the projects "Poverty reduction and human development: Analysis of alternative strategies within an economywide framework" (completed in December, 2008) and "Micro simulations of poverty reduction and service delivery in a user-friendly, economy-wide framework" (ongoing).

At the UN Millennium summit of September 2000, the leaders of the world committed themselves to the achievement of the Millennium Development Goals (MDGs), a set of time-bound targets related to poverty, gender, education, health, and access to water and sanitation. Since 2000, the MDGs have remained at the top of the world development agenda.

As part of its ongoing support of the achievement of the MDGs, the World Bank in 2004 initiated a work program aimed at developing and applying a tool for economywide analysis of country-level MDG strategies. This focus on an economywide approach reflected the realization that, especially in low-income countries,

- (a) the implementation of MDG strategies typically have strong economywide effects, significantly affecting GDP growth, the government budget, the balance of payments, production and trade in different sectors, and the markets for labor and others factors; and
- (b) existing economywide models were not fit for the analysis of MDG strategies, especially given the fact that they did not explicitly consider the “production” of MDGs (with human development services and other determinants as inputs) or their influence on growth and other aspects of economic development.

The new model was named MAMS (Maquette for MDG Simulations).

With the aim of enhancing the practice of economywide development strategy analysis, the program has followed a multi-pronged approach, combining tool development, country applications with presentations and training activities, striving to serve as a catalyst for activities that use the MAMS framework, both inside and outside the World Bank.

ACTIVITIES TO DATE

The achievements of this work program may be divided into three parts: (1) tool development; (2) country applications; and (3) presentations and workshops.

Tool development

MAMS, which was developed under this work program, is a multi-purpose, dynamic CGE model. Its originality is to fully integrate social services and their impact on the economy, including MDG indicators, within an otherwise standard economy-wide dynamic framework. The model is flexible in terms of structural features, disaggregation (and related data requirements), and the number of time periods for which it is solved; so far, it has been used for simulation periods ranging from 5 to 45 years. It may also be used for comparative-static analysis.

MAMS is rooted in the tradition of open-economy CGE modeling that was developed at the World Bank in the late 1970s and early 1980s.² Its more specific starting point is the

² See Dervis, Kemal, Jaime de Melo, and Sherman Robinson. (1982) *General Equilibrium Models for Development Policy*. New York: Cambridge University Press.

standard CGE model developed by Lofgren and coauthors.³ The fact that it draws on a literature that already is familiar to a large number of analysts facilitates use and understanding of the model. As opposed to other models, it incorporates a module with a relatively detailed representation of “social sectors,” linking MDG achievements (in health, education, and water-sanitation) to the provision of services and other determinants. These services may be provided by the government and the private sectors. The performance of the educational system influences the size and composition (in terms of educational achievement) of the labor force, thereby providing a feedback from MDG achievements to the rest of the economy. Growth is endogenous, determined by growth in factor employment and total factor productivity (TFP). TFP is influenced by the composition of the labor force (across labor types that differ in educational achievement), growth in government capital stocks (especially in public infrastructure), and changes in economic openness. User-selected elasticity values determine the importance of changes in government capital stocks and economic openness. MAMS tracks foreign and domestic debt stocks and related interest payments.

The multi-purpose capabilities of MAMS are demonstrated by the fact that it is or has been used to analyze topics in a wide range of areas: strategies for MDGs and poverty reduction, fiscal policy (including trade-offs between different allocations of government spending), foreign aid, debt sustainability, labor markets, demographics, gender, natural disasters, and long-run growth.

The user controls the treatment of structural features, most importantly the rules for clearing the different macro balances (for the government, savings-investment, and foreign exchange) and the markets for labor and other factors, including the treatment of un-/under-employment.

If the analysis is not focused on issues related to non-poverty MDGs and education, MAMS may be run in a non-MDG version with reduced data requirements. If so, the growth of the labor force (which still may be split into multiple categories) has to be exogenous.

In the computer files underlying MAMS (written in GAMS and Excel), the database (which determines model disaggregation and selected model features), and the simulations are specified in Excel files that are clearly separated from the rest of the code. A wide range of reports are also generated in Excel. The separation of the database from the rest of the code greatly facilitates the application of MAMS to new country databases.

The disaggregation of households, private production sectors, and non-labor factors is invariably flexible. For the non-MDG version, the disaggregation of labor and government sectors is also flexible; the minimum required disaggregation is three factors (labor, private capital, and government capital), two sectors (government and non-government), and three institutions (government, household, and rest of world).

³ See Lofgren, Hans, Rebecca Lee Harris, and Sherman Robinson, with assistance from Moataz El-Said and Marcelle Thomas. (2002) A Standard Computable General Equilibrium (CGE) Model in GAMS. Microcomputers in Policy Research, Vol. 5. Washington, D.C.: IFPRI

Such a database can be constructed from readily available World Bank datasets.

Irrespective of mode (MDG or non-MDG) and disaggregation, the user can choose between three built-in, top-down approaches to the generation of poverty indicators by simulation, year, and representative household (RH; the model household categories). The approaches and their key assumptions are as follows: (i) elasticity approach: a fixed elasticity of headcount poverty with respect to welfare for each RH; (ii) survey approach: fixed distribution of welfare for each RH given by recent household survey; (iii) lognormal approach: fixed, log-normal distribution of welfare for each RH. With respect to the welfare measure, the user can choose between real per-capita household consumption or income. These approaches are all more powerful if the model has multiple representative households, classified on the basis of their income sources; among these approaches, the second may be the preferred one. As a fourth alternative, like other CGE models, MAMS may be linked to a microsimulation module (for which alternative specifications are possible), an approach followed in a large number of applications in joint work with the UN. This may be the preferred approach, especially if the microsimulation module is well integrated with MAMS. With the exception of the first (elasticity) approach (which is limited to headcount poverty), these approaches all generate standard poverty and inequality indicators.

Applications

MAMS applications have been completed or are underway in at least 35 countries. The work has been carried out in two major contexts: World Bank analytical work (primarily direct inputs into economic and sector work in sub-Saharan Africa and Latin America and the Caribbean) and projects carried out by UN-DESA (Department of Economic and Social Affairs, the UNDP and national teams, jointly with the World Bank in two regions (Latin America and Caribbean; Middle East and North Africa) and without World Bank participation in one region (Asia).

In the first context, World Bank analytical work, MAMS has developed into a multi-purpose tool, responding to the demands in each specific context; the UN-related activities have been focused on assessing national MDG strategies. Table 1 shows the countries and the issues that are covered in completed and on-going work. The MAMS website (www.worldbank.org/mams) includes additional information on these applications. Appendices B and C provide a complete list of MAMS-related outputs and activities in chronological order.

In the second, UN context, MAMS is the core model for case studies of a total of 27 countries (5 in the Arab region; 4 in Asia, and 18 in the completed project on Latin

Table 1. Summary of MAMS country applications*

Country	Year	Issues addressed	Context/Product
Argentina	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Bolivia	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Brazil	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Burkina Faso	2009	Fiscal space; family planning	CEM**; two background papers (in progress)
Chile	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Colombia	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Costa Rica	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Dominican Republic	2008	MDG Strategy	UNDESA-UNDP-WB project; volume in Spanish (published); also CEDLAS working paper
DRC	2008	Debt sustainability and fiscal space	PER***
	2007	Debt sustainability and fiscal space	CAS****
Ecuador	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Egypt	2008	MDG Strategy	UNDESA-UNDP-WB project with national team (in progress)
El Salvador	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Ethiopia	2009	Gender aspects of education and labor market	Forthcoming Ch. in WB volume on methods for gender analysis in Africa
	2008	MDG strategy	Ch. in volume on growth and aid in Africa
	2008	MDG strategy	Ch. in volume on macro-micro methods; also WB working
	2007	Demography	WB Report: Capturing the Demographic Bonus in Ethiopia
	2007	Labor market flexibility and rural-	WB Report: Urban Labour Markets in Ethiopia
	2006	Public finance and aid	WB Report: Review of Public Finance
	2006	Capacity to absorb aid and MDGs	Ch. in IMF volume on aid management
	2006	Capacity to absorb aid and MDGs	UNU-WIDER research paper
	2006	MDGs and scaled-up aid	UNDESA working paper
	2006	ODA and oil prices	Background paper for Global Development Finance
	2005	Poverty reduction strategy	Input to government PRS and related World Bank analysis
	2005	MDG strategy	Input to GoE MDG strategy and related World Bank analysis; used in 2007 CEM
	2005	Capacity to absorb aid and MDGs	Box in WB-IMF Global Monitoring Report
Ghana	2008	Growth, poverty and MDGs	WB working paper
	2007	MDGs strategy in Ghana and Honduras	WB working paper and MDG volume published by PEP Network
	2007	MDG strategy	CEM
Guatemala	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Honduras	2008	MDG Strategy	UNDESA-UNDP-WB project; volume in Spanish (published)
	2007	MDGs strategy in Ghana and Honduras	WB working paper and MDG volume published by PEP Network
	2007	MDG strategy	PER

cont. Table 1. Summary of MAMS output with country applications*

Country	Year	Issues addressed	Context/Product
Indonesia	2008	MDG Strategy	UNDESA-UNDP project with national team (in progress)
Jamaica	2009	Aid and policy responses to a hurricane	
	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Jordan	2008	MDG Strategy	UNDESA-UNDP-WB project with national team (in progress)
Kenya	2008	Poverty, inequality, and government policy	WB Report: Kenya Poverty and Inequality Assessment (in progress)
	2008	Long-run growth; government trade-offs	WB Report: Kenya -- Accelerating and Sustaining Inclusive Growth; also 2007 background paper
	2008	MDGs, aid, and public spending allocation	Working Paper Swedish Business School in Örebro
	2008	MDGs and aid needs	Working Paper Swedish Business School in Örebro
Kyrgyzstan	2008	MDG Strategy	UNDESA-UNDP project with national team (in progress)
Malawi	2007	Government spending composition and trade-offs	PER
Mexico	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Morocco	2008	MDG Strategy	UNDESA-UNDP-WB project with national team (in progress)
Nicaragua	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Paraguay	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Peru	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Philippines	2008	MDG Strategy	UNDESA-UNDP project with national team (in progress)
Rwanda	2009	Aid, government spending composition, global crisis	PER (in progress)
Tunisia	2008	MDG Strategy	UNDESA-UNDP-WB project with national team (in progress)
Uganda	2007	Growth, government trade-offs and efficiency	CEM: Beyond Recovery - Investment and Behavior Change for Growth
Uruguay	2008	MDG Strategy	UNDESA-UNDP-WB project with national team; volume in Spanish (published)
Uzbekistan	2008	MDG Strategy	UNDESA-UNDP project with national team (in progress)
Venezuela	2007	Poverty reduction strategy	WB Report: An Assessment of Poverty and Selected Misiones Sociales
Yemen	2008	MDG Strategy	UNDESA-UNDP-WB project with national team (in progress)

*For additional details, see www.worldbank.org/mams

**CEM = Country Economic Memorandum

***PER = Public Expenditure Review

****CAS = Country Assistance Strategy

America and the Caribbean). Typically, each case study addresses the consequences of raising the supply of different types of government services sufficiently to achieve MDGs 2 (universal completion of primary school), 4 (reduced under-five mortality rates), 5 (reduced maternal mortality rates), and 7 (increased access to improved water and sanitation services). These targets are simulated under alternative assumptions about the source of the additional financing required (direct taxes, domestic borrowing, foreign borrowing, or foreign grants). The vast majority of these studies are done by teams made up of analysts in academia and government in the different countries. World Bank and/or UN staff or consultants have carried out a few of these studies.

Presentations, Courses, and Workshops

Since its inception, the MAMS work program has emphasized outreach activities that disseminate research findings, raise the level of awareness of MAMS (both inside and outside the World Bank), and provide training that paves the way for model applications involving a larger group of analysts. These activities have reached a diverse audience, including staff and consultants at the World Bank and other international organizations, and government officials and policy analysts in developing countries. As of the end of March 2009, presentations and training related to MAMS have been given on close to 60 occasions, including numerous presentations at conferences, seminars organized by the World Bank or the UN, and 16 courses or workshops ranging between one and five days. Many of these activities have taken place in developing countries. One result of these activities is that a relatively large number of analysts have developed skills that they subsequently have used in different MAMS applications, expanding the initial core group of analysts working with MAMS.

Appendix A. Contributors to Work Program

The key author of the model and the computer code is Hans Lofgren, with major contributions from Carolina Diaz-Bonilla and Martin Cicowiez (CEDLAS-UNLP and CEI). The coding and the general development of the model has benefited greatly from inputs and discussions with Francois Bourguignon, Maurizio Bussolo, Sébastien Dessus, Jouko Kinnunen (Åland Statistics and Research Bureau and Government Institute for Economic Research [VATT], Finland), Jeffrey Lewis, Denis Medvedev, Sherman Robinson (IDS, University of Sussex), Marco Sanchez (UN-DESA), Hans Timmer, Dominique van der Mensbrughe, and Rob Vos (UN-DESA).

In addition to the above-mentioned, the following World Bank staff members, consultants, and colleagues from other institutions have contributed to this work program (unless otherwise noted associated with the World Bank at the time of their involvement): Rahimaisa Abdula, Hashim Ahmed (Ethiopian Development Research Institute), Luc Christiaensen, Bernard Decaluwé (Laval University), Ishac Diwan, Doerte Doemeland, Boniface Essama-Nssah, Kene Ezemenari, Shahrokh Fardoust, Enrique Ganuza (UNDP), Jan Gottschalk (IMF), Cornelia Kaldewei (UN-DESA), Ahmed Kamaly (American University in Cairo), Jeni Klugman, Praveen Kumar, Jorgen Levin (University of Örebro,

Sweden), Pavel Lukyantsau, John McArthur (UN Millennium Project), Denis Medvedev, Dino Merotto, Hannah Nielsen, Koufi Nouvé, Antonio Nucifora, John Page, François Painchaud, Luiz Pereira da Silva, Caterina Ruggeri-Laderchi, Mark Sundberg, and Shuo Tan. Their individual contributions are recognized in Appendices B (a chronological list of outputs in written or electronic form) and C (a chronological list of Presentations, Courses and Workshops).

In addition to his personal contributions to the work, Francois Bourguignon played a critical role in starting and encouraging this program during his time as Chief Economist at the World Bank; in his position as the Manager directly involved, Hans Timmer has similarly provided critical institutional support. Robert Vos (UN-DESA) and Enrique Ganuza (UNDP) have contributed greatly to the application of the framework to countries in different parts of the developing world by engaging UN-DESA and UNDP in this work program. In the collaborative work involving the UN and the World Bank, Marco Sanchez, Martin Cicowiez and Carolina Diaz-Bonilla have made key contributions by backstopping the work of the different country teams.

Appendix B. Outputs in Written and/or Electronic Form

1. Bourguignon, François, Maurizio Bussolo, Luiz A. Pereira da Silva, Hans Timmer and Dominique van der Mensbrugge. 2004. “MAMS – MAquette for MDGs Simulation: a simple Macro-Micro Linkage Model for a Country-Specific Modeling of the Millennium Development Goals or MDGs.” March 21.
2. Box titled “Addressing absorptive capacity: the case of Ethiopia”, published in World Bank. 2005. *Global Monitoring Report: Millennium Development Goals: From Consensus to Momentum* (pp. 164-165) and prepared by Mark Sundberg and Hans Lofgren.
3. Input on trade-offs between poverty and human development MDGs for presentation by John Page, Chief Economist for the Africa Region, in Paris, prepared by Hans Lofgren.
4. FDRE (The Federal Democratic Republic of Ethiopia). 2005. “Ethiopia: The Millennium Development Goals (MDGs) Needs Assessment Synthesis Report,” Ministry of Finance and Economic Development, Addis Ababa, December, Addis Ababa. Chapter IV (The Macroeconomic Impact of the MDG Strategy/Plan, pp. 45-52) is based on simulations with a macro version of MAMS, carried out by Hans Lofgren and Carolina Diaz-Bonilla.
5. Bourguignon, Francois, and Mark Sundberg. 2006. ‘Constraints to Achieving the MDGs with Scaled-Up Aid’, UNDESA Working Paper 15, March. United Nations: New York.

6. Sundberg, Mark, and Hans Lofgren. 2006. "Absorptive Capacity and Achieving the MDGs: The Case of Ethiopia," pp. 141-167 in eds. Peter Isard, Leslie Lipschitz, Alex Mourmouras, and Boriana Yontcheva. *The Macroeconomic Management of Foreign Aid: Opportunities and Pitfalls*. Washington, DC: IMF.
7. Bourguignon, François, and Mark Sundberg. 2006. "Absorptive Capacity and Achieving the MDGs," UNU-WIDER Research Paper No. 2006/47. May.
8. World Bank Report. Ethiopia. Review of Public Finance. Poverty Reduction and Economic Management Unit. Country Department for Ethiopia. Africa Region. Draft. June 15, 2006. For MAMS-based inputs, prepared by Hans Lofgren and Rahimaisa Abdula, see pp. 13-14, 41-47 and 89-93.
9. Lofgren, Hans, and Rahimaisa Abdula. 2006. *Domestic Policies and Foreign Aid: Alternative Scenarios for Ethiopia, 2006-2010*. Background Paper for Ethiopia. Review of Public Finance. Poverty Reduction and Economic Management Unit. Country Department for Ethiopia. Africa Region. Draft. June 15.
10. Lofgren, Hans and Carolina Diaz-Bonilla. 2006. "Economywide Simulations of Ethiopian MDG Strategies." Paper presented at the Ninth Annual Conference on Global Economic Analysis, held in Addis Ababa in June.
11. Lofgren, Hans and Carolina Diaz-Bonilla. 2006. "MAMS: An Economywide Model for Analysis of MDG Country Strategies: Technical Documentation." Mimeo. World Bank. Paper presented at the Ninth Annual Conference on Global Economic Analysis, held in Addis Ababa in June.
12. Kamaly, Ahmed. 2006. *On the Determinants of Selected Health and Education Outcomes in sub-Saharan Countries: A Quantitative Analysis*. Draft. July 3.
13. Brief entitled "Improving Country-Level Modeling in the World Bank", prepared by DECVP (Jeff Lewis and Francois Bourguignon) with inputs from DECPG (Hans Lofgren and Hans Timmer).
14. Lofgren, Hans and Carolina Diaz-Bonilla. 2006. *Patterns of Growth and Public Spending in Uganda: Alternative Scenarios for 2003-2020*. Background paper for Country Economic Memorandum. Draft. October 11.
15. Bourguignon, François and Mark Sundberg. 2007. "Absorptive capacity and achieving the MDGs", pp. 640-663 in editors George Mavrotas and Anthony Shorrocks. *Advancing development: Core Themes in Global Economics*. Palgrave. March.
16. World Bank Report No. 38665-ET. *Urban Labour Markets in Ethiopia: Challenges and Prospects*. Volume I: Synthesis Report; Volume II: Background Papers. Poverty Reduction and Economic Management Unit, Africa Region.

- March, 2007. For MAMS-based inputs, prepared by Hans Lofgren and Rahimaisa Abdula, see Vol. I pp. 71-73 and Vol. II, pp. 167-175.
17. World Bank Report No. 36434-ET. Capturing the Demographic Bonus in Ethiopia: The Role of Gender Equitable Development and Demographic Actions. Poverty Reduction and Economic Management 2 (AFTP2). Country Department for Ethiopia. Africa Region. June 27, 2007. (For MAMS-based inputs, prepared by Hans Lofgren and Rahimaisa Abdula, see pp. viii-ix and 105-114).
 18. World Bank Report No. 39370-VE. Bolivarian Republic of Venezuela. An Assessment of Poverty and Selected Misiones Sociales. (In Two Volumes) Volume 1: Main Report. June 10, 2007. (For MAMS-related materials, prepared by Carolina Diaz-Bonilla and Jose Molinas, see pp. 79-82.)
 19. Bussolo, Maurizio, and Denis Medvedev. 2007. Accelerated Growth and MDG Achievement in Ghana: A General Equilibrium Analysis of Fiscal Policy Alternatives. Background paper for Ghana CEM. Draft. August.
 20. Lofgren, Hans and Praveen Kumar. 2007. The Challenges of Achieving Kenya's Vision 2030: A Macro Perspective. Background paper for World Bank Report No. 42844-KE. Kenya: Accelerating and Sustaining Inclusive Growth. Policy Note. July 2008. Draft, August. World Bank.
 21. World Bank. 2007. Country-Based Scaling Up: Assessment of Progress and Agenda for Action. Paper prepared for Development Committee Meeting in September. (For a discussion of MAMS and highlights of results from MAMS applications, see pp. 7, 11-12, 21, and 43-54.)
 22. World Bank Report No. 40145-MW. Malawi: Public Expenditures Review. Poverty Reduction and Economic Management, AFTP1. AFCS2. Africa Region. September (For MAMS-related materials, prepared by Carolina Diaz-Bonilla, Hans Lofgren, Pavel Lukyantsau, and Antonio Nucifora, see pp. xv-xvi, 13-20, and 127-133.)
 23. Diaz-Bonilla, Carolina, Hans Lofgren, Pavel Lukyantsau, and Antonio Nucifora. 2007. "Trade-Offs between Human Development and Infrastructure Spending in Malawi". Background paper for Malawi Public Expenditure Review. Draft. May.
 24. World Bank Report No. 39221-UG. Uganda – Moving Beyond Recovery: Investment and Behavior Change, For Growth. Country Economic Memorandum. Volume I: Summary and Recommendations; Volume II: Overview. September 2007. Poverty Reduction and Economic Management Unit. Africa Region. (For MAMS-related materials, prepared by Hans Lofgren and Carolina Diaz-Bonilla, see Volume II, pp. 128-147.)

25. Bussolo, Maurizio, and Denis Medvedev. 2007. Challenges to MDG Achievement in Low Income Countries: Lessons from Ghana and Honduras. World Bank Policy Research Working Paper 4383. The World Bank. Development Economics Prospects Group. November 2007.
26. World Bank Report No: 41474-ZR. International Development Association. Country Assistance Strategy for the Democratic Republic of Congo for the Period FY08-FY11 Volume 1. November 16, 2007. AFCC2, Africa Region. (For MAMS-related materials, prepared by Doerte Doemeland and François Painchaud, see pp. 22-23.)
27. World Bank Report No. 40934-GH. Ghana: Meeting the Challenge of Accelerated and Shared Growth. Country Economic Memorandum. Volume I: Synthesis, Volumes II-III: Background Papers. November 28, 2007. PREM 4, Africa Region. (For MAMS-based materials by Zeljko Bogetic, Maurizio Bussolo, and Denis Medvedev, see Volume I, pp. 52-72.)
28. World Bank Report No. 39251-HO. Honduras. Public Expenditure Review. Volume I: Executive Summary and Main Report; and Volume II: Background Chapters and Annexes. Poverty Reduction and Economic Management, Central America Department, Latin America and the Caribbean Region. November 19, 2007. (For MAMS-based input, prepared by Maurizio Bussolo and Denis Medvedev, see Volume I, pp. iii, 17; Volume II, pp. 43-49 and 293-296.)
29. Dessus, Sébastien, and Jorgen Levin. 2007. "Trade-offs between Millennium Development Goals in Tanzania." Draft. November.
30. Lofgren, Hans, Carolina Diaz-Bonilla, and Dino Merotto. 2007. "Patterns of Growth and Public Spending in Uganda: Alternative Scenarios for 2003-2020." Draft. November 19.
31. Excel file programmed to aid in the construction of a Country Macro SAM for MAMS, prepared by Hans Lofgren. Last update: February 14, 2008.
32. Bogetic, Zeljko; Bussolo, Maurizio; Medvedev, Denis. 2008. "Achieving accelerated and shared growth in Ghana: a MAMS-based analysis of costs and opportunities," World Bank Policy Research Working Paper 4523, February.
33. Lofgren, Hans. 2008. Note on MAMS Simulation Analysis for Uganda's National Development Plan. Presented to the Ministry of Finance, Planning and Economic Development. February 22. (The content of the note and the simulations were developed in collaboration with the Ministry during a mission to Kampala, February 11-15.)
34. World Bank Report No: 42167-ZR. Democratic Republic of Congo: Public Expenditure Review. March 2008. Poverty Reduction and Economic Management

- 3, Africa Region. (For MAMS-related materials, prepared by Doerte Doemeland and François Painchaud, see pp. 5 and 40-45.)
35. Doemeland, Doerte, and François Painchaud. 2007. "Analyses of Public Expenditure Trends and Fiscal Sustainability." Background paper for World Bank Report No: 42167-ZR. Democratic Republic of Congo: Public Expenditure Review.
 36. Díaz-Bonilla, Carolina, Hans Lofgren, and Martín Cicowiez. 2008. Public Policies for the MDGs: The Case of the Dominican Republic. Published in eds. Vos, Robert, Enrique Ganuza, Hans Lofgren, Marco V. Sánchez, and Carolina Diaz-Bonilla. Políticas Públicas para el Desarrollo Humano: ¿Cómo lograr los Objetivos de Desarrollo del Milenio en América Latina y el Caribe? (Date of revised draft: March 11). Longer version issued by CEDLAS (Centro de Estudios Distributivos, Laborales y Sociales Universidad Nacional de La Plata), La Plata, Argentina as Documento de Trabajo Nro. 72, Julio, 2008 (www.depeco.econo.unlp.edu.ar/cedlas/pdfs/doc_cedlas72)
 37. Bussolo, Maurizio and Denis Medvedev. 2008. "Honduras." Published in eds. Vos, Robert, Enrique Ganuza, Hans Lofgren, Marco V. Sánchez, and Carolina Diaz-Bonilla. Políticas Públicas para el Desarrollo Humano: ¿Cómo lograr los Objetivos de Desarrollo del Milenio en América Latina y el Caribe? (Date of revised draft: March 22)
 38. Lofgren, Hans, and Carolina Diaz-Bonilla. 2008. "Foreign aid, taxes, and government productivity: Alternative scenarios for Ethiopia's Millennium Development Goal Strategy," pp. 267-300 in eds. Delfin S. Go and John Page, Africa at a Turning Point? Growth, Aid, and External Shocks. Washington, D.C.: World Bank.
 39. Mikkelsen, Nina Romby. 2008. Achieving MDGs through Foreign Aid: Analysis in an Economy Wide Framework. Seminar paper. Opponent Lau Adsersen. Conducted by Finn Tarp. Presented April 21. University of Copenhagen, Department of Economics.
 40. Lofgren, Hans. 2008. "An Exploratory General-Equilibrium Analysis of Time, Gender, and Education in Ethiopia." Paper prepared for the Department for International Development (DfID) – World Bank Seminar "Integrating Gender into Country-Level Growth Analysis: Practical Tools and Analytical Approaches," held at DfID, London, June 2-3, 2008
 41. World Bank Report. Ethiopia. Unleashing the Potential of Ethiopian Women: Trends and Options for Economic Empowerment. June 2008 Draft. Poverty Reduction and Economic Management 2. Africa Region.

42. Lofgren, Hans. 2008. An Exploratory General-Equilibrium Analysis of Time, Gender, and Education in Ethiopia. May 6. Background paper for the forthcoming World Bank Report “Unleashing the Potential of Ethiopian Women: Trends and Options for Economic Empowerment,” Poverty Reduction and Economic Management 2, Africa Region.
43. Lofgren, Hans and Martin Cicowiez. 2008. Note on MAMS Simulation Analysis for Kenya Poverty and Inequality Assessment. June 20.
44. Lofgren, Hans and Carolina Díaz-Bonilla. 2008. MAMS: An Economy-Wide Model for Analysis of MDG Country Strategies – an application to Latin America and the Caribbean. Published in eds. Vos, Robert, Enrique Ganuza, Hans Lofgren, Marco V. Sánchez, and Carolina Diaz-Bonilla. Políticas Públicas para el Desarrollo Humano: ¿Cómo lograr los Objetivos de Desarrollo del Milenio en América Latina y el Caribe? (Date of last draft: June 20)
45. Lofgren, Hans. 2008. Simplified Mathematical Statement for MAMS. Mimeo. Last update: June 5.
46. Lofgren, Hans and Jouko Kinnunen. 2008. Note on MAMS Simulation Analysis for Uganda’s NDP. June 11. Presented to the Ministry of Finance, Planning and Economic Development. (The content of the note and the simulations were developed in collaboration with the Ministry during a mission to Kampala, May.)
47. Bourguignon, Francois, Carolina Diaz-Bonilla, and Hans Lofgren. 2008. “Aid, service delivery and the Millennium Development Goals in an Economywide Framework,” pp. 283-315 in François Bourguignon, Maurizio Bussolo, and Luiz A. Pereira da Silva, eds. The Impact of Macroeconomic Policies on Poverty and Income Distribution: Macro-Micro Evaluation Techniques and Tools. Washington, D.C.: World Bank.
48. World Bank Report No. 42844-KE. Kenya: Accelerating and Sustaining Inclusive Growth. Policy Note. July 2008. Poverty Reduction and Economic Management Unit 2. Country Department for Kenya. Africa Region. (For MAMS-related materials, prepared by Hans Lofgren and Praveen Kumar, see pp. 24 and 101-104; for background paper, see above under Lofgren and Kumar, August, 2007.)
49. Kiringai, Jane, and Jörgen Levin. 2008. Achieving the MDGs in Kenya with Some Aid and Reallocation of Public Expenditures. Working Paper No. 10, Swedish Business School at Örebro University. September.
50. Vos, Robert, Enrique Ganuza, Hans Lofgren, Marco V. Sánchez, and Carolina Diaz-Bonilla, Eds. Políticas Públicas para el Desarrollo Humano: ¿Cómo lograr los Objetivos de Desarrollo del Milenio en América Latina y el Caribe? 2008. PNUD — ONU/DAES — Banco Mundial — ONU/CEPAL. (Companion volume in English expected in 2009.)

51. Gottschalk, Jan, Vu Le, Hans Lofgren, and Kofi Nouve. 2009. Analyzing Fiscal Space Using MAMS: An Application to Burkina Faso. Draft IMF Working paper and Chapter for forthcoming Country Economic Memorandum. January.
52. Ruggeri Laderchi, Caterina, Hans Lofgren, and Rahimaisa Abdula. 2009. "Addressing Gender Inequality in Ethiopia: Trends, Impacts and the Way Forward," Forthcoming in eds. Jorge Arbache, Quentin Wodon, Alex Kolev, and Ewa Filipiak. Gender disparities in Africa: Methods and Techniques. World Bank and French Development Agency.
53. GAMS program for cross-entropy estimation of SAMs and input-output tables written by Hans Lofgren. Last update: February 5, 2009
54. Excel file programmed to aid in the construction of a population data set for MAMS using UN data, prepared by Hans Lofgren. Last update: February 21, 2009.
55. May, John F., Jean-Pierre Guengant, Hans Lofgren. 2009. Coping with Population Growth. Chapter on Demography for Burkina Faso Country Economic Memorandum. March.
56. Lofgren, Hans, Hannah Nielsen and Kene Ezemenari. 2009. Scaling Up Aid or Scaling Down: The Global Economic Crisis and Rwanda's MDGs. Draft. March.
57. Kinnunen, Jouko, Hans Lofgren, and Dino Merotto. 2009. Family Planning, Human Development and Growth in Uganda. Paper prepared for presentation at the Twelfth Annual Conference on Global Economic Analysis, Santiago, Chile, June 10-12, 2009. Draft. April.
58. World Bank Report No. 44190-KE. Kenya Poverty and Inequality Assessment. Executive Summary and Synthesis Report. April 2009. Poverty Reduction and Economic Management Unit. Africa Region. (For MAMS-related materials, prepared by Hans Lofgren and Martin Cicowiez, see pp. 157-158; for background note, see above under Lofgren and Cicowiez. June, 2008.)
59. Lofgren, Hans, Hannah Nielsen, and Kene Ezemenari, Kene. 2009. Scaling up aid or scaling down: the global economic crisis and Rwanda's MDGs. Policy Research Working Paper WPS 4958. June.

Appendix C. Presentations, Courses, and Workshops

1. Presentation by François Bourguignon titled "Toward Achieving the MDGs in Ethiopia: Economywide Analysis of Alternative Scenarios Using MAMS" at meeting with the UN Millennium Project in New York, December 2, 2004. The

- presentation was prepared by François Bourguignon, Maurizio Bussolo, Hans Lofgren, Hans Timmer and Dominique van der Mensbrugge
2. Keynote address by François Bourguignon titled “Towards Achieving the MDGs: Addressing Absorptive Capacity Constraints,” delivered at the UN ECOSOC High Level Policy Dialogue, New York, March 17, 2005.
 3. Presentation by Mark Sundberg of Ethiopian MAMS case study as part of the session “Aid Absorption: Recognizing and Avoiding Macroeconomic Hazards” at the Seminar on Foreign Aid and Macroeconomic Management, Maputo, Mozambique, March 14-15, 2005, organized by the IMF Institute and African Department.
 4. Workshop for the joint UNDP – UN-DESA – World Bank project “Public Policies for MDGs in Latin America and the Caribbean,” which covers 19 countries in the region, held in Montevideo, Uruguay, April 4-6, 2005. Key presentations by Martin Cicowiez, Carolina Diaz-Bonilla, Enrique Ganuza, Hans Lofgren, Marco Sanchez, Sherman Robinson, and Rob Vos.
 5. Presentations and program at the PREM Learning Week half-day course “MAMS: Maquette for MDG Simulations,” offered April 27, 2005. The program: 1. Overview (Hans Lofgren); 2. MAMS: Why the framework is needed (Hans Timmer); 3. An application to Ethiopia (Carolina Diaz-Bonilla); 4. The structure of the MAMS framework (Hans Lofgren); 5. MDG and micro-simulation modules – alternative approaches (Maurizio Bussolo); 6. Data needs and a demonstration run (Carolina Diaz-Bonilla); 7. General discussion and wrap-up.
 6. Presentation titled “MAMS: Model Structure and an Application to Ethiopia” given by Hans Lofgren and Carolina Diaz-Bonilla on May 19, 2005 to a group of IMF and World Bank economists working on Africa, including a VC link to the World Bank office in Ethiopia. The audience included the IMF Mission Chief for Ethiopia and the World Bank Country Director for Ethiopia.
 7. Presentation titled “Achieving the MDGs in Ethiopia: Alternative Strategies and Foreign Aid Constraints” given by Hans Lofgren and Carolina Diaz-Bonilla to World Bank staff in DC and, via VC, World Bank and Ethiopian government staff in Addis Ababa, July 22, 2005.
 8. Presentation titled “MAMS: Model Structure and an Application to Ethiopia,” given by Hans Lofgren on July 26, 2005 to representatives of the National Treasury of South Africa and World Bank staff in the Africa region (prepared with Carolina Diaz-Bonilla).
 9. Presentation titled “Economic Policy Analysis in Ethiopia: Issues and Macro-Micro Approaches” given by Hashim A. Ahmed (Ethiopian Development Research Institute [EDRI], Addis Ababa), Sherman Robinson (the Institute for

- Development Studies [IDS], Sussex), Ricardo Gottschalk (IDS), Hans Lofgren, and Carolina Diaz-Bonilla to Ethiopian economists and donors at the EDRI, September 27, 2005.
10. Lecture titled “MAMS: A CGE Model for MDG Analysis” given by Hans Lofgren (prepared with Carolina Diaz-Bonilla) as part of the course “Simulating the Poverty Impact of Macroeconomic Policies within the PAMS Framework,” organized by Essama Boniface-Nssah of the World Bank Poverty Reduction and Economic Management Network and offered to World Bank and IMF staff, October 13, 2005.
 11. Presentation titled “Public Expenditure Analysis with MAMS” given by Hans Lofgren (prepared with Carolina Diaz-Bonilla) as part of a Technical Roundtable on Approaches to Improve the Composition of Public Expenditures, organized by PRMPR and PRMPS in cooperation with ECSPE, October 13, 2005.
 12. Presentation titled “Economy-Wide Simulations of MDG Strategies: Approach and Lessons from Ethiopia” given by Hans Lofgren and Carolina Diaz-Bonilla as part of a World Bank Africa region (AFRCE and AFR PREM) Breakfast Seminar on October 18, 2005.
 13. Workshop for the joint UNDP – UN-DESA – World Bank project “Public Policies for MDGs in Latin America and the Caribbean,” which covers 19 countries in the region, held in Caracas, Venezuela, November 7-10, 2005. Key presentations by Martin Cicowiez, Carolina Diaz-Bonilla, Enrique Ganuza, Hans Lofgren, Marco Sanchez, and Rob Vos.
 14. Presentation titled “Introduction to MAMS Application in a Country Study” given by Carolina Diaz-Bonilla at meeting of the World Bank Development Economics Prospects Group (DECPG), February 1, 2006.
 15. Presentation titled “Analyzing MDG Strategies” given by Hans Lofgren (prepared with Carolina Diaz-Bonilla) at the Workshop “Experiences with Ex-Ante Poverty Impact Assessments of Macroeconomic Policies in Bangladesh, Cameroun, Ghana, the Philippines, and Nepal,” organized by the New Rules for Global Finance Coalition and held at IMF Headquarters, Washington, DC, March 15, 2006.
 16. Three-day course titled “Economy-Wide Analysis of Strategies for Achieving the MDGs in Sub-Saharan Africa,” with 25 participants, including researchers from six countries in sub-Saharan Africa (Ethiopia, Ghana, Kenya, Madagascar, Malawi, and Uganda) and World Bank staff and consultants, designed by Hans Lofgren and offered at World Bank HQ, April 4-6, 2006. Presentations were given by François Bourguignon (World Bank Chief Economist and Senior Vice President), Maurizio Bussolo (Senior Economist, Development Economics – Prospects Group, World Bank), Bernard Decaluwé (Professor of Economics,

- Laval University, Quebec, Canada), Carolina Diaz-Bonilla (Consultant, Development Economics – Prospects Group, World Bank), Boniface Essama-Nssah (Senior Economist, Poverty Reduction and Economic Management, World Bank), Ahmed Kamaly (Assistant Professor in Economics, American University in Cairo, Cairo, Egypt), Hans Lofgren, Senior Economist, Development Economics – Prospects Group, World Bank), John W. McArthur (Deputy Director, UN Millennium Project), John Page (Chief Economist, Africa Region, World Bank), Sherman Robinson (Professor of Economics, University of Sussex, UK), Mark Sundberg (Lead Economist, Development Economics – Office of the Chief Economist, World Bank), and Hans Timmer (Manager, Development Economics – Prospects Group, World Bank).
17. Preparatory workshop for the project “Assessing Development Strategies to Achieve the MDGs,” carried out by the World Bank in partnership with UN-DESA and UNDP. The workshop was held at the League of Arab States, Cairo, May 4-5, 2006. Key presentations by Martin Cicowiez, Hans Lofgren, Marco Sanchez, and Rob Vos.
 18. Presentations and program at the PREM Learning Week half-day course “MAMS: A Tool for Analysis of MDG Strategies,” offered May 2, 2006. The program: 1. Introduction and Overview (Hans Timmer/Hans Lofgren); 2. The structure of the MAMS framework (Hans Lofgren); 3. Data requirements (Carolina Diaz-Bonilla); 4. MDG Scenarios in MAMS: Defining and simulating (Denis Medvedev); 5. Small group work: Analyzing simulations for country X (Medvedev); 6. General discussion and wrap-up.
 19. Presentation titled “An Econometric Analysis of the Determination of Health and Education Outcomes in sub-Saharan Africa” given at World Bank HQ by Ahmed Kamaly, June 1, 2006.
 20. Session titled “Economywide Analysis of MDG Strategies,” at the Annual Conference on Global Economic Analysis “Multilateralism, Bilateralism, and Development”, organized by the Center for Global Trade Analysis, Purdue University and held at the Economic Commission for Africa, Addis Ababa, Ethiopia, June 15-17, 2006. The presentations: (a) Hans Lofgren. MAMS: A Framework for Analyzing MDG and Poverty Reduction Strategies; (b) Carolina Diaz-Bonilla. Economywide Simulations of Ethiopian MDG Strategies; (c) Maurizio Bussolo. Millennium Development Goals for Honduras: Current Achievements and Forthcoming Challenges.
 21. Presentation titled “MAMS: Outil pour la diagnostique de l’achèvement des ODM et son application au cas de Madagascar” given by Dominique van der Mensbrugge (prepared together with Shuo Tan), Antananarivo, June 22, 2006
 22. Presentation titled “Analysis of Strategies for Achieving the Millennium Development Goals” by Hans Lofgren and Carolina Diaz-Bonilla at the Fifth

- General Meeting of the PEP (Poverty and Economic Policy) Research Network, held at the Economic Commission for Africa, Addis Ababa, June 18-22, 2006.
23. Presentation titled “Capturing the Demographic Bonus in Ethiopia” given by Kathleen Beegle and Hans Lofgren on July 10, 2006 at the National Symposium “Population Issues and the PASDEP: From Concept to Action.” The symposium was attended by representative of Ethiopia’s government, international organizations, research institutions, and NGOs interested in population issues in Ethiopia.
 24. Presentation by François Bourguignon titled “MDG Strategy Analysis: Issues, Methods and Agenda for Future Work” (prepared together with Hans Lofgren and Jeff Lewis) at meeting on Approaches to MDG Analysis Organized by the Poverty Group, Bureau for Development Policy, UNDP and held in New York, August 15, 2006.
 25. Workshop for the joint UNDP – UN-DESA – World Bank project “Public Policies for MDGs in Latin America and the Caribbean,” which covers 19 countries in the region, held in Santiago, Chile, September 4-6, 2006. Key presentations by Martin Cicowiez, Carolina Diaz-Bonilla, Enrique Ganuza, Hans Lofgren, Marco Sanchez, and Rob Vos.
 26. Presentation by Jeffrey D. Lewis titled “MDG Strategy Analysis: Issues, Methods and Agenda for Future Work” (prepared together with Francois Bourguignon and Hans Lofgren) at the “Technical Workshop on MDG based Planning and Development of a Pro-Poor Policy Framework”, held in Bangkok, February 19-21, 2007 (presentation made via video connection).
 27. Presentation by Hans Lofgren titled “Macro Scenarios for Vision 2030,” as part of a mission for work on Kenya’s Country Economic Memorandum. The presentation was given to representatives of Kenya’s Ministry of Finance Ministry of Planning and Economic Development in Nairobi on February 19, 2007.
 28. Meeting the Challenge of Accelerated and Shared Growth. Joint World Bank – Government of Ghana Technical Review Workshop of the CEM Analytical Background Papers in collaboration with Ghana’s think tanks, development partners, and private sector, held at the World Bank Office, Accra with video connection to the D.C. Office, May 2-3, 2007. MAMS-based analysis underpinned Session 1: Ghana’s Growth Story: Looking Back, Looking Forward (How to Accelerate Growth and Achieve Key MDGs), presented by the author team: Z. Bogetic, M. Bussolo, X. Ye, Denis Medvedev, Quentin Wodon and Daniel Boakye, co-chaired by Dr. Akoto Osei, Deputy Minister of Finance, and Dr. Addison, Director, Research Department, Bank of Ghana.
 29. Presentation by Luc Christiaensen titled “Benefits from accelerating the demographic transition – evidence from Ethiopia” (with inputs from Hans

- Lofgren and Rahimaisa Abdula) given at the “Economists Forum” held at World Bank Headquarters, April 19, 2007. The presentation was based on the World Bank Report No. 36434-ET. Capturing the Demographic Bonus in Ethiopia: The Role of Gender Equitable Development and Demographic Actions (see separate entry).
30. Inception and Training Workshop of the project “Assessing Development Strategies to Achieve the MDGs in the Arab Region”, carried out by the World Bank in partnership with UN-DESA and UNDP. The workshop was held at the League of Arab States, Cairo, April 2-5, 2007. Key presentations by Martin Cicowiez, Hans Lofgren, Marco Sanchez, and Rob Vos. For more information, see: www.un.org/esa/policy/cairo_mdgs.html
 31. Presentation by Hans Lofgren, Carolina Diaz-Bonilla, and Hans Timmer titled “MAMS: A Tool for Public Finance and Development Strategy Analysis” offered as part of the “Public Finance Analysis and Management Core Course,” PREM Learning Week, April 27, 2007. The file “PFAM-Course-Program-April-16.doc” includes the course program. Course background material is found on the World Bank at: www1.worldbank.org/publicsector/pe/pfma07/
 32. Presentation by Carolina Diaz-Bonilla titled “Choosing the Balance between Human Development and Infrastructure Spending in Malawi,” given to World Bank staff, Government representatives and Donors in Lilongwe, Malawi, June 20-21, 2007. The presentation covered MAMS-related results for the Malawi PER. Carolina also gave a workshop to World Bank staff interested in the modeling framework.
 33. Presentation by Hans Lofgren titled “Policy Modelling of the MDGs: the MAMS Approach” (prepared with Carolina Diaz-Bonilla) at the workshop “Policy Modelling and Simulation for Well-Being Assessment: A Comparison of Methodological Tools” organized by the Human Development, Capability, and Poverty International Research Centre (HDCP-IRC) of the Institute for Advanced Study (IUSS) of the University of Pavia, Pavia, Italy, July 12-14, 2007.
 34. Presentation by Maurizio Bussolo and Denis Medvedev titled “Accelerated Growth and MDG Achievement in Ghana: A General Equilibrium Analysis of Fiscal Policy Alternatives,” given at the Poverty Reduction, Equity and Growth Network (PEGNet) Conference, held in Berlin, September 6-7, 2007.
 35. Presentation titled "Fiscal Sustainability Analysis with MAMS: The Case of DRC: offered by Doerte Doemeland and Francois Painchaud to PREMED staff, October 16, 2007.
 36. Presentation given by Jeffrey Lewis titled “MAMS: Why, What and How?” as a LAC Economic Policy Group (LCSPE) Brown Bag Lunch Seminar at the World Bank, Washington D.C. November 1, 2007.

37. Hans Lofgren and Jouko Kinnunen gave the two-day course “Introduction to MAMS: A Tool for Analysis of Development Strategies” in Kampala, December 10-11, 2007 to approximately 15 trainees, mostly from the Ministry of Finance but also from other government agencies and local research institutes.
38. Presentation titled “Uganda’s population growth: Is there need for action?” by Paul Mpuga, Dino Merotto, Jouko Kinnunen and Hans Lofgren was given in Kampala, December 14, 2007, at the World Bank Country Office to representatives of the government. The presentation had the following components: Background: Demographics in Uganda; Demographics and Economic Growth; Modeling Demographic Policy in MAMS; and Brainstorming and Next Steps for Analysis? (The part on MAMS was delivered by Jouko Kinnunen.)
39. Assessing Development Strategies to Achieve the MDGs in the Arab region. A UN-DESA – UNDP – World Bank Project. Second Training Workshop, Tunis, Tunisia, January 21-24, 2008. Key presentations by Hans Lofgren and Marco Sanchez. For details, see: www.un.org/esa/policy/tunis_mdgs.html
40. Presentation titled “Selected Features of MAMS: A Framework for Development Strategy Analysis,” by Jouko Kinnunen and Hans Lofgren, delivered by Kinnunen at the Thursday Seminar of the Government Institute for Economic Research (VATT), Helsinki, February 28, 2008.
41. The one-day course “Introduction to Fiscal Policy Analysis with MAMS” was offered by Hans Lofgren and Carolina Diaz-Bonilla at World Bank HQ, March 13, 2008. Materials and more information about the course is found at: www-wbweb.worldbank.org/prem/prmep/economicpolicy/dtea/details_dtea.asp?ID=574
42. Presentation by Jörgen Levin and Jane Kiringai titled "Achieving the MDGs in Kenya – a need for additional aid flows?" given at Business School, Nairobi University, April 15, 2008.
43. Two-day course titled “Introduction to MDG Analysis with MAMS,” offered by Martin Cicowiez and Hans Lofgren as part of the World Bank – UNDESA – UNDP Project “Assessing Development Strategies to Achieve the MDGs in the Arab Region” at the Ministry of Planning, Sanaa, April 5-6, 2008.
44. Four-day course titled “Introduction to MDG Analysis with MAMS,” offered by Martin Cicowiez, Hans Lofgren, and Marco Sanchez as part of the World Bank - UN-DESA – UNDP Project “Assessing Development Strategies to Achieve the MDGs in the Arab Region” at the Ministry of Planning and International Cooperation, Amman, April 9-12, 2008.

45. Presentation by Hans Lofgren and Carolina Diaz-Bonilla titled “Scaling Up Aid in Uganda: A MAMS-Based Analysis,” offered as part of the two-day “Module 7: Evaluating the Poverty Impacts of Economy-Wide Policies” of the DEC Course “Poverty and Inequality Analysis. April 14, 2008. Information about the course and a full set of course materials are found at: go.worldbank.org/9TN00JMG10
46. Presentation by Hans Lofgren titled “Integrating Gender into Country-Level Macroeconomic Tools in Sub-Saharan Africa” offered as part of the Seminar “Integrating Gender into Country-Level Macroeconomic Tools in Sub-Saharan Africa”, PREM Learning Week, Washington, D.C., April 21, 2008.
47. Presentation by Hans Lofgren titled “MAMS: A Tool for Public Finance and Development Strategy Analysis” offered as part of the “Public Finance Analysis and Management Core Course,” PREM Learning Week, April 23, 2008. Information about the course and a full set of course materials are found at: go.worldbank.org/BI7WNZUCM0
48. Presentation by Hans Lofgren titled “An Exploratory General-Equilibrium Analysis of Time, Gender, and Education in Ethiopia” given via VC to the Department for International Development (DfID) – World Bank Seminar “Integrating Gender into Country-Level Growth Analysis: Practical Tools and Analytical Approaches,” held at DfID, London, June 2-3, 2008.
49. One-week course titled “Introduction to Policy Analysis with MAMS in GAMS for Ghana,” offered June 2-7 2008 to seven Ghanaian officials from the Ministry of Finance and Economic Planning by team from DECPG with inputs from other World staff. Hans Lofgren was course coordinator and main instructor.
50. Presentation by Caterina Ruggeri Laderchi and Hans Lofgren titled “Unleashing the Potential of Ethiopian Women: Trends and Options for Economic Empowerment” given at the Ministry of Finance and Economic Development, Addis Ababa, July 2, 2008.
51. Presentation by Hans Lofgren and Caterina Ruggeri Laderchi titled “Unleashing the Potential of Ethiopian women: Current Gender Disparities and Scenarios for the Future” given on July 4, 2008 as part of the Sixth International Conference on the Ethiopian Economy, organized by the Ethiopian Economic Association and held July 3-5 at the United Nations Conference Center (UNCC), Addis Ababa.
52. Assessing Development Strategies to Achieve the MDGs in Asia. A UN-DESA – UNDP UN-ESCAP Project. Inception and Training Workshop, United Nations Conference Centre, ESCAP, Bangkok, 20-22 August 2008. The country case studies for this project are Indonesia, Kyrgyzstan, Philippines, and Papa New Guinea. Key presentations by Martin Cicowiez, Marco Sanchez, and Rob Vos. For details, see: www.un.org/esa/policy/bangkok_mdgs.html

53. Presentation by Jörgen Levin and Jane Kiringai titled "Achieving the MDGs in Kenya – some aid and reallocation of public expenditures," given at Business School, Nairobi University, August 21, 2008.
54. Presentation by Carolina Diaz-Bonilla entitled "Public Policies and the MDGs: The Case of the Dominican Republic" of paper by Carolina Diaz-Bonilla, Hans Lofgren, and Martin Cicowiez at II Encuentro Regional Sobre Modelos de Equilibrio General: Sus Aportes en la Formulacion de la Politica Economica en America Latina y el Caribe, Alajuela, Costa Rica, November 24-25, 2008.
55. Workshop offered by Hans Lofgren and Martin Cicowiez Sana'a, November 6-9, 2008 in support of Yemen country team analysis for the project "Assessing Development Strategies to Achieve the MDGs in the Arab Region", carried out by the World Bank in partnership with UN-DESA and UNDP.
56. One-week course titled "Introduction to CGE Policy Analysis in GAMS for Uganda" offered to 10 trainees from the Ministry of Finance and other government agencies, at the World Bank office (together with Jouko Kinnunen, World Bank consultant and VATT/ÅSUB, Finland)
57. Assessing Development Strategies to Achieve the MDGs in the Arab region. A UN-DESA – UNDP – World Bank Project. Third Training Workshop, Golden Tulip Farah Casablanca, Casablanca, December 2-5, 2008. Key presentations by Martin Cicowiez, Hans Lofgren, Marco Sanchez, and Rob Vos. For details, see: www.un.org/esa/policy/casablanca_mdgs.html
58. Presentation by Hans Lofgren and Şebnem Şahin entitled "Policy responses to a hurricane: A macroeconomic analysis for Jamaica" for the Brown Bag Lunch Seminar "Valuing Economic Impacts of Disasters within Economy-Wide Models", offered by the Global Facility for Disaster Reduction and Recovery as part of the activities of the UN-World Bank Joint Assessment on Economics of Disaster Risk Reduction. World Bank, Washington, D.C., February 19, 2009.
59. Assessing Development Strategies to Achieve the MDGs in Asia. A UN-DESA – UNDP Project. Second Training Workshop, Dusit Thani Manila, Manila, March 24-27, 2009. Key presentations by Martin Cicowiez, Marco Sanchez, and Rob Vos. For details, see: www.un.org/esa/policy/manila_mdgs.html.
60. Presentation by Jan Gottschalk (IMF) titled "Analyzing Fiscal Space Using MAMS: An Application to Burkina Faso" at Informal Lunchtime Seminar, IMF Washington, D.C., April 8, 2009.
61. Presentation by Hans Lofgren and Carolina Diaz-Bonilla titled "The Poverty Impact of Scaled-Up Government Spending: A General-Equilibrium Analysis," offered as part of the two-day "Module 7: Evaluating the Poverty Impacts of Economy-Wide Policies" of the DEC Course "Poverty and Inequality Analysis.

April 29, 2009. Information about the course and a full set of course materials are found at: go.worldbank.org/6MJKE6J690

62. Presentation by Hans Lofgren (prepared with Carolina Diaz-Bonilla) titled “Development Strategy Analysis with MAMS: Model Structure and Policy Insights” at the South Africa National Treasury Symposium “Economy-wide Analysis and Economic Policy”, held in Kieivits Kroon, South Africa, May 28-29, 2009.
63. Presentation by Jouko Kinnunen (of VATT – Finland’s Government Institute for Economic Research; prepared with Hans Lofgren) titled “Family Planning, Human Development and Growth in Uganda” at Twelfth Annual Conference on Global Economic Analysis, held in Santiago, Chile, June 10-12, 2009. The presentation was based on a paper with the same title by Jouko Kinnunen, Hans Lofgren, and Dino Merotto.
64. Presentation by Hans Lofgren (prepared with Carolina Diaz-Bonilla) titled “Analyzing policies for achieving the MDGs with MAMS” at the International Forum for Sustainable Asia and the Pacific (ISAP), held at the Institute for Global Environmental Strategies (IGES), Hayama, Japan, June 26-27, 2009.