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May 18, 2010

To: Members of the Executive Board

From: The Secretary

Subject: **Group of Twenty Mutual Assessment Process—Alternative Scenarios—A Preliminary Note prepared by Staff of the International Monetary Fund**

Attached for **information** of Executive Directors is a draft note for the G-20 Mutual Assessment Process on alternative scenarios prepared by the staff for the G-20 Deputies Meeting in Berlin, Germany on May 19, 2010.

Please note that the analysis in the draft note is preliminary. Feedback from G-20 Deputies will help staff produce a revised report on alternative scenarios for the meeting of G-20 Ministers in early June.

It is intended that this paper will be published on the Fund's external website following the G-20 meeting.

Questions on the Note may be referred to Mr. Srinivasan (ext. 34589), Mr. Faruqee (ext. 37332), and Mr. Stavrev (ext. 38732) in RES.

This document will shortly be posted on the secure page of the extranet, a website for Executive Directors and member country authorities.

Att: (1)

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GROUP of TWENTY

**Meeting of G-20 Deputies**
**May 19, 2010**
**Berlin, Germany**

# G-20 Mutual Assessment Process—Alternative Scenarios
## (Preliminary Analysis)

Prepared by Staff of the International Monetary Fund

INTERNATIONAL MONETARY FUND

# G-20 Mutual Assessment Process—Alternative Scenarios
## A Preliminary Note by the IMF Staff

## Executive Summary

*Following an initial assessment report of G-20 frameworks for the Mutual Assessment Process (MAP), this note provides Fund staff's preliminary analysis of alternative scenarios*. G-20 projected outcomes appeared optimistic in key respects and had weaknesses in other areas. Alternative scenarios are used to explore the potential benefits of further policy action. Key findings are as follows.

*Collective action would yield tangible and material benefit to the G-20 membership and the global economy*. An upside scenario of collaborative policy actions would credibly strengthen outcomes, and address key weaknesses in G-20 policy frameworks. Specifically:

- *Global growth would be stronger, more balanced, and thus more sustainable*. Global growth would be higher relative to the refined baseline by a cumulative 2½ percentage points over the medium term, while world output would be higher by 1½ trillion U.S. dollars. Global demand would be more balanced, and external imbalances would narrow appreciably.
- *Employment gains would be significant across regions*. An estimated 8 million more jobs would be created in advanced economies, and by over 12 million in emerging Asia and rest of the world, expanding total employment by 20 million jobs.

*Strengthened policy action would mitigate risk, helping reduce chances of a downside scenario that could inflict heavy costs.* As previously identified by Fund staff, the G-20 "base case" is subject to significant downside risks—particularly, higher fiscal risks and lower productivity. A scenario where these risks materialize suggests that global output could be lower by a cumulative 2 percentage points (more than 1 trillion U.S. dollars) over the medium term relative to the baseline; and over 10 million jobs could be lost.

*Policies should be prioritized and tailored to the main needs of G-20 country groups*.

- Credible fiscal consolidation in *advanced economies* (beyond what is in the baseline), particularly for large deficit countries, should be a top priority given sovereign debt market stress and other fiscal risks. Also, advanced countries should accelerate financial repair and reform to rebuild a well-functioning financial system to support growth, while safeguarding financial stability. Following the crisis, product and labor market reform has taken on renewed importance to repair supply potential and reduce unemployment, which is otherwise projected to remain persistently high.
- In *emerging surplus* economies, policy should aim at enhancing social safety nets and reforming corporate governance and financial markets, supported by greater exchange rate flexibility to facilitate a rebalancing of demand towards domestic sources, given softer external demand. In *emerging deficit* economies, policies should focus on reducing job protection in the formal sector and simplifying product market regulation to strengthen growth and employment.

# G-20 Mutual Assessment Process (MAP)—Alternative Scenarios
# A Preliminary Note by the IMF Staff[1]

## I. INTRODUCTION

1. **The initial assessment report by Fund staff of G-20 macroeconomic and policy frameworks identified several economic and policy issues and key risks**. The report noted that the G-20 "base case" projections, at face value, appear to deliver strong, sustainable and balanced growth. However, when compared with historical evidence relating to recovery from crises and staff's analysis in the *World Economic Outlook* (*WEO*), growth projections appear optimistic and subject to downside risks. Unemployment is projected to decline sharply. Fiscal balances are projected to improve noticeably, helped by strong growth. Fiscal consolidation in advanced economies though appears insufficiently ambitious, posing risks to the sustainability of public finances. External imbalances remain large, reflecting a modest rebalancing of global demand, posing risk of disorderly global rebalancing. Finally, financial system repair plans and regulatory reforms need to be better specified and implemented in a speedy and consistent manner to better support G-20 growth objectives, while safeguarding financial stability.

2. **Based on the findings of the initial report, the G-20 asked Fund staff to explore two alternative scenarios to develop a set of policy actions that would help achieve their shared objectives**. First, an *upside scenario* "...and associated policy requirements, that would accelerate the progress towards achieving stronger, more sustainable and balanced growth, in the areas where this is not achieved in the base case." Second, a *downside scenario* "... that identifies downside risks to the base case scenario and identifies the policies needed to avoid them."

3. **This note provides a preliminary analysis of alternative scenarios to consider further policy action in response to the G-20's request**. The note is structured as follows. Section II summarizes staff's refinement of the "base case" projections to ensure greater multilateral consistency and to reflect recent economic and market developments. This section also summarizes the modeling framework used for the scenarios. Building on the refined baseline, Section III presents the "upside" policy scenario, illustrating the benefits of collective action. Section IV discusses a "downside" scenario and explores the policies needed to mitigate the risks identified in the baseline. Section V summarizes the potential benefits moving across the two scenarios and indentifies key policy priorities that would help G-20 members achieve their shared objectives for strong, sustainable and balanced growth.

## II. REFINING THE G-20 MAP BASE CASE AND THE MODELING FRAMEWORK

4. **To better anchor the scenario analysis, refinements were made to the "base case" to ensure greater multilateral consistency and to reflect recent economic and market developments** (see Box 1 for details). These refinements are technical in nature and do not reflect further judgment on the effectiveness of G-20 policies assumed in the baseline.

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[1] Prepared by Research Department staff of the International Monetary Fund. Analysis of structural reform priorities and scenarios was done in collaboration with OECD staff and has also benefited from ILO inputs.

Revisions to the G-20 MAP base case are necessary for two reasons—greater multilateral consistency and to reflect recent developments.

- First, G-20 macroeconomic frameworks exhibit significant differences with respect to the likely output losses following the financial crisis. The major G-20 advanced economies that experienced a banking crisis project a fairly rapid recovery, under which they recoup most of the crisis-related output losses, while others project a more gradual recovery. Implicitly, the former countries see large output gaps, while the latter do not. Accordingly, staff used a model-based econometric framework to estimate a consistent set of output gaps and adjust the "base case" as needed.

- Second, submissions by individual G-20 members differed by vintage, with some providing input as early as end-January and others as late as end-March 2010. Since then, fast-moving events in financial markets and significant economic developments have occurred. Thus, the base case was updated in a straightforward manner to also reflect recent economic and market developments (see Box 1).

5. **From this refined baseline, alternative scenarios are developed using the IMF's Global Integrated Monetary and Fiscal (GIMF) model**. While the simulations are applied to each country or region in the model, the assessment from the model simulations is then mapped into the broader groupings of G-20 member countries, consistent with the initial MAP report. More specifically:

- The model contains 5 stylized countries or regions—the United States, euro area, Japan, emerging Asia, and rest of the world (ROW). The simulations are based on these entities or blocks.

- To help differentiate key fiscal and structural policy challenges facing euro area surplus versus euro area deficit countries, the *model was extended to distinguish between Germany and other area members*. For the purpose of monetary policy and exchange rate analysis, however, the euro area is still treated as a single unit, featuring a common monetary policy rate and single currency.

- The model simulation results are translated into policy implications for broader G-20 groups by mapping the particular model block to the respective G-20 thematic grouping with similar economic circumstances and policy challenges.

## III. The Upside Scenario—Benefits of Collective Action

6. **The upside scenario explores policies that could credibly deliver G-20 growth objectives of strong, sustained and balanced growth**. The set of polices examined here, tailored to the G-20 groupings, go beyond what is assumed in G-20 policy frameworks and is used to explore the benefits of collective action in two key dimensions. First, the scenario explores the extent to which a set of G-20 policy actions could provide a *sounder basis* for the desired G-20 outcomes, as the frameworks (at face value) envisage outcomes that already appear strong. Second, the upside scenario explores further policy options to address *key weaknesses* in the G-20 base case, such as persistently high unemployment and possibly lower potential output.

7. **The set of policy options that could strengthen G-20 outcomes would require collaborative action across the membership**. The major policy actions considered across the G-20 countries include: (i) "growth-friendly" fiscal consolidation in advanced economies; (ii) structural reforms (including strengthening social safety nets) and infrastructure spending in emerging surplus economies, accompanied by increased exchange rate flexibility;[2] and (iii) structural reforms in advanced economies to tackle high unemployment and weaker potential following the crisis. These policy "layers" can be motivated as follows.

- *There is a pressing need, in general, for fiscal consolidation in G-20 advanced economies*. In the "base case," fiscal deficits and debt levels in advanced economies are projected to remain large, notwithstanding favorable macroeconomic outcomes. This could weigh on the recovery and, specifically, further raise market pressure in an environment of elevated uncertainty about sovereign debt risks. Thus, elements of alternative policy scenarios should consider fiscal consolidation in advanced economies, notably those with large fiscal and external deficits. Consolidation plans should be strong, credible, and to the extent possible supportive of growth. This requires a more efficient redistribution of the tax burden and allocation of spending.

- *The second layer involves complementary action to support global demand in emerging economies, particularly those with large external surpluses*. Policies should aim at strengthening social safety nets to reduce high precautionary saving, increasing infrastructure spending, and higher exchange rate flexibility to facilitate the shift to domestic demand. Also, fiscal restraint in advanced economies could result in a global demand "deficit." Thus, policies in external surplus countries should aim at boosting their internal demand to support growth if external demand is weaker.

- *The third layer addresses supply constraints on G-20 growth, particularly in advanced economies hardest hit by the crisis*. Potential output growth in large advanced countries is low and has to be increased to maintain high living standards. Importantly, structural reform should be accelerated in key areas to repair damaged potential and to reduce high unemployment. Policies should focus on reforming labor and product markets to increase productivity and lower unemployment. Also, while not explicitly modeled, financial system regulatory reform and repair of financial intermediation would be crucial to support stronger economic growth.

## A. Fiscal Consolidation and Restoring Sustainability in Advanced Economies

8. **In the upside scenario, fiscal adjustment in advanced economies is underpinned, to the extent possible, by "growth-friendly" policies**. Recognizing that the medium-term effect of fiscal consolidation will partly depend on the composition of expenditure and tax instruments, the model examines the impact of the following fiscal measures under different assumptions about credibility: (i) lower taxes on capital and labor; (ii) higher taxes on consumption; and (iii) entitlement reform (through lower transfers) and some cuts in government consumption. Where applicable, additional fiscal consolidation is assumed

[2] Throughout the scenario analysis, nominal exchange rates are assumed to adjust flexibly between the regions (except, of course, between Germany and the rest of the euro area).

relative to the plans in G-20 policy frameworks and starts in 2011; all measures are phased in gradually over 5 years, with policies gaining full credibility by the third year of the consolidation plan (i.e., in 2013).[3] In particular, the first layer of the upside scenario considers the following:

- For *advanced deficit countries* (represented by the United States in the model) as well as some advanced surplus countries (represented by Japan) a fiscal deficit reduction of [3] percentage points is achieved by a reduction in general government transfers by [1½] percent of GDP and an increase in consumption taxes by [1½] percent of GDP (equivalent to an increase in consumption tax rate of about 2 percentage points).[4,5]

- For *euro area surplus countries* (represented by Germany in the model) fiscal deficits are lowered by [1] percentage point by cutting government transfers by [½] percent of GDP and raising consumption taxes by [½] percent of GDP. On the back of more pressing fiscal problems, *euro area deficit countries* (represented by the euro area excluding Germany in the model) greater fiscal consolidation of [2½] percentage points of GDP is pursued via [1¾] points reduction in government transfers and [1¾] points increase in consumption taxes.

- For *emerging surplus countries* (represented by emerging Asia in the model), *no* fiscal consolidation is assumed, while remaining countries in the rest of the world pursue fiscal consolidation of [1] percentage point of GDP.

9. **Fiscal consolidation in G-20 advanced economies alone would dampen growth in the short run, including for G-20 partner countries** (Figure 1). For *advanced economies*, the simulated fiscal consolidation lowers real GDP relative to baseline, reflecting lower disposable income. Monetary policy mitigates the slowdown by remaining accommodative longer relative to the baseline. As credibility of fiscal policy increases over time, private spending is increasingly "crowded in." Investment and employment increase and economic activity gains momentum, resulting in higher real GDP relative to the baseline over the medium term. For *emerging Asia* and *ROW*, however, real GDP is lower relative to the baseline over the projection horizon, given their high export dependence. Weaker external demand (relative to the baseline) from advanced partners more than offsets the benefits of lower interest rates globally.

10. **The scenario highlights that credibility is critical for the growth impact and, ultimately, the success of the fiscal adjustment**. For example, with full credibility of fiscal measures, real GDP in the United States and the euro area are higher than in the absence of

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[3] With less than full credibility, private agent expectations anticipate some reversal or slippage in consolidation until year three of the adjustment. Afterwards, expectations align with (fully credible) consolidation plans.

[4] To boost potential output in advanced economies, labor and capital income tax rates are lowered by about 6 percentage points. This is financed by cutting government consumption by 1 percent of GDP, and increasing consumption taxes by additional 3½ percent of GDP.

[5] The assumed fiscal consolidation in the model is broadly in line with IMF staff analysis on the size of fiscal adjustment needed to ensure sustainable public debt ratios to GDP at more prudent levels.

fiscal adjustment, because lower labor and capital taxes stimulate investment and employment. Under limited credibility, investment is postponed, employment is weaker, and thus the growth outcome is inferior. This could, in turn, make the fiscal effort more difficult to sustain. Thus, the credibility and nature of the fiscal adjustment is important:

- *A shift from payroll to consumption taxes facilitates fiscal consolidation, while increasing medium-term potential*.[6] Where tax increases are unavoidable, this should be done in the least distortionary manner possible. For example, a shift from payroll taxes to VAT facilitates fiscal consolidation by increasing labor supply and potential output, while helping address competitiveness. Other avenues that could be considered (but are outside the model) include eliminating tax distortions, including those relating to the treatment of financial leverage or energy consumption.

11. **Nevertheless, in the short term, fiscal retrenchment would likely dampen global growth in the absence of complementary action**. More credible fiscal adjustment would mitigate but not likely reverse the decline in domestic demand in those economies. Current account deficits would narrow in *advanced deficit* countries, matched by lower external surpluses in *emerging and euro area surplus* countries. While global imbalances would narrow, global growth would also likely be lower. This reflects insufficient rebalancing of global demand.

### B. Structural Reform and Strengthening Demand in Emerging Economies

12. **To support stronger global growth, steps to strengthen internal demand in emerging economies are also considered.** The next layer in the upside scenario focuses on the multilateral implications of policy measures in emerging economies (particularly, those with large external surpluses) to boost internal demand, given the weaker outlook for external demand from advanced partner countries undergoing consolidation.

13. **Policy measures in emerging economies aim at reducing high precautionary saving and eliminating existing economic distortions**. Accordingly, the key reforms for *emerging surplus* economies are strengthening social safety nets, namely pension and health insurance, together with increased exchange rate flexibility to facilitate the rebalancing of demand towards domestic sources.[7] Higher infrastructure spending in fast-growing economies is also considered to alleviate supply bottlenecks. And, for *emerging deficit* economies, policy efforts are focused on reduction of job protection in the formal sector and simplifying product market regulation. Structural reform policies for the simulations key off the policies identified for each grouping in the initial report. The choice of policies is consistent with priorities identified by the OECD (see Box 2).

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[6] A shift to consumption taxes will reduce overall tax distortions by lowering the tax burden on work; while distributional effects regarding VAT can be limited by keeping the VAT structure simple and broad- based.

[7] Policy areas that are also relevant (but outside the model) include reform of corporate governance and financial market development that could lower high corporate saving in some emerging economies.

14. **Adding policies that enhance social safety nets and improve infrastructure in emerging economies boosts their growth and supports global activity**. In particular, a gradual increase of government investment of [2] percent of GDP in emerging Asia implemented over 3 years, increases domestic demand, notably investment, relative to the outcome in the first scenario—"fiscal consolidation in advanced economies." In addition, a strengthening of safety nets through targeted transfers to the poor (who tend to be liquidity constrained), amounting to around [2] percent of GDP and financed by a higher fiscal deficit, further increases domestic demand in emerging Asia. Half of the policy measures are financed through higher deficits given available fiscal space, and the other half through higher consumption taxes. A higher infrastructure spending and enhanced safety nets in emerging Asia also improve growth outcomes in ROW, relative the fiscal consolidation scenario (Figure 1).

### C. Product and Labor Market Reform to Enhance Potential

15. **The final layer of the upside scenario involves structural policies that enhance productivity and repair damage to supply potential following the crisis, and reduce high unemployment.** In particular, for *advanced surplus* economies, the policies include financial sector reform, better targeted unemployment benefits and temporarily higher spending on active labor market policies; increase of the retirement age; easing of employment protection; reduction of barriers to competition in network industries and in professional services; and, strengthening competition in the retail distribution sector. For *advanced deficit* economies the focus is on implementation of comprehensive financial sector reform, in combination with credible fiscal consolidation that could enhance potential.

16. **Easing product market regulation can increase productivity appreciably based on OECD analysis.** The simulation results show that reducing barriers to competition in network industries, promoting competition in professional services and retail distribution, and simplifying product market regulation by moving towards "best practices" appreciably improves overall productivity growth, particularly in G-20 advanced surplus economies in the range of ½ to ¾ percentage points per year over the simulation (see Box 3).

17. **Finally, adding key labor and product market reforms improves growth prospects and reduces high unemployment**. Using a package of labor and product market reforms, labor supply in some *advanced surplus and deficit* countries (Germany and the remaining euro area)[8] is increased by [3] percent, while in other *advanced deficit* economies and *the rest of the G-20* countries (the United States, emerging Asia, and rest of the world) it is increased by [1] percent, and in Japan by about [½] percent.[9,10] Labor market reforms

[8] Remaining euro area countries comprise both advanced deficit and surplus countries, but structural reform to raise low potential output growth is needed in both groups. In the model, Germany's benefits from product market reform partly reflect larger spillovers from higher productivity in others due to greater openness.

[9] The package of labor market policies needed to achieve the simulated increase in labor supply would include implementing OECD *Going for Growth* priorities such as reduction in labor tax wedges and increases in spending on active labor market policies (ALMP), starting in 2012 and phased in gradually over 3 years.

[10] Reforms to increase labor supply are complemented with product market reform to boost labor demand.

improve significantly growth outcome in advanced economies, particularly in Europe. More importantly, improved labor markets in Europe, has significant positive spillover effects on emerging Asia and ROW, where growth improves appreciably relative to the cumulative effect of the "fiscal consolidation" and "enhanced safety nets" scenarios (Figure 1).

18. **In addition to stronger growth, collective policy action across G-20 members results in more balanced global demand** (Figure 2). Specifically, in *advanced deficit* economies, on the back of higher saving and stronger external demand, current account deficits decline relative to the baseline. In *advanced surplus* economies, current account surpluses fall, as product and labor market reforms boost investment demand and private consumption. Finally, in *emerging surplus* countries (emerging Asia), current account surpluses decline, as improved safety nets lower precautionary private saving and together with higher infrastructure spending increase domestic demand. While these effects are significant, the major drivers of current account adjustments are changes in public and private saving rates, most importantly the relative sizes of fiscal consolidations across regions.

19. **Compared to the refined baseline, key gains are as follows**:

- *Global GDP is [2½] percent higher over the medium term*. The growth gains (and policy adjustments) are largest for advanced economies who suffered the most damage from the crisis. In regions with smaller GDP effects, output is nonetheless higher due to complementary domestic policy action and significantly higher than in the case with no further policy action.

- *Unemployment is reduced, ranging from [¼] to [4½] percentage points across regions*. The reduction is significant in several cases, particularly in *advance surplus* economies where unemployment has been persistently higher following the crisis. The numbers are credibly supported by ambitious labor market reform, complemented by product market reform, and more efficient taxation policies in advanced economies.

Upside Scenario: Cumulative Employment and Output Gains

(Relative to the refined baseline in 2014)

| | Employment | Unemployment | | Real GDP | |
|---|---|---|---|---|---|
| | (Millions) | (Percentage points) | | (2009 USD billion) | (Percent) |
| United States | 3.0 | -1.9 | | 392 | 2.8 |
| Germany | 2.0 | -4.5 | | 220 | 6.6 |
| Euro area excl. Germany | 3.0 | -2.5 | | 373 | 4.1 |
| Japan | 0.5 | -0.7 | | 116 | 2.3 |
| Emerging Asia | 4.4 | -0.2 | 1/ | 39 | 0.4 |
| Rest of the world | 7.7 | -1.0 | 1/ | 317 | 1.8 |
| World | 20.5 | -1.5 | | 1457 | 2.5 |

Sources: G-20 authorities and IMF staff estimates.

1/ As unemployment for emerging Asia and rest of the world is not modeled in GIMF, its response to shocks is calculated using the output response for these blocks and assuming the maximum estimated response of unemployment to output of the other blocks.

20. **The simulations show clear benefits of collective policy action across all regions**. The main result is that multilateral policy actions (tailored to each group) appreciably strengthens G-20 outcomes, and on a more sounder policy basis, in terms of stronger, more balanced and sustainable growth. Global demand is noticeably rebalanced across regions, while robust global growth is maintained. This result is largely achieved due to the stronger growth in surplus countries, driven by higher domestic demand and supported by exchange rate flexibility.[11] This boosts exports in advanced deficit countries, compensating for greater fiscal retrenchment. Another important outcome is lower unemployment over the medium term.

## IV. Downside Scenario and Policies to Mitigate Risks

21. **The downside scenario explores the implications of key risks for the G-20, if they were to materialize**. This scenario analyzes both the consequences for G-20 outcomes and the attendant policy actions that would be required under more stressful circumstances. The mitigation of risks to help ensure baseline outcomes or policies to achieve better outcomes if risks were to materialize would depend crucially on the strength, commitment, and quality of the policy actions. However, reactive policies forced into damage control would likely be less effective than those implemented under more favorable circumstances.

22. **Risks surrounding fiscal sustainability and market concerns have moved front and center**. Against the back drop of recent market developments, sovereign risk premia are a key element of a downside scenario. Risk premia may increase sharply—dampening growth in these economies and creating spillovers into other economies. This would have implications for the banking sector as well, through mark-to-market losses and higher funding costs. Moreover, the credibility of fiscal adjustment would likely be lower in a downside scenario, affecting the impact on private spending. While the recent sovereign debt stabilization package agreed by the EU states goes a long way in mitigating sovereign fiscal risks, risks are not eliminated.

23. **Another key risk is that supply potential is considerably lower after the crisis**. In particular, for advanced economies at the epicenter of the crisis, potential may be lower than assumed in the MAP frameworks. A materialization of this risk would have adverse implication for fiscal consolidation in advanced economies as actual growth will be lower than projected in the MAP, resulting in higher-than-projected fiscal deficit and public debt levels. This could reinforce market concerns about debt sustainability. These elements constitute the key features of the downside scenario.

24. **If downside risks were to materialize, further output and unemployment losses would be sustained** (Figure 3). A plausible simulation suggests that cumulative output and employment losses of [½] to around [4] percent and [¼] to [1] percent percentage points, respectively relative to the refined baseline in 2014. The losses may not appear dramatic, but to better appreciate the benefits of policies and collective actions aimed at mitigating the risks to the base case and further improving the outcomes, it would be useful to compare

[11] In the upside scenario, real exchange rate movements associated with collective policy action are significant in some cases, suggesting that nominal exchange rate flexibility would facilitate global rebalancing.

results of the upside scenario relative to the downside. For instance, global GDP would be a dramatic [4½] percentage points higher in the upside scenario relative the downside scenario.

Downside Scenario: Cumulative Employment and Output Losses
(Relative to the refined baseline in 2014)

| | Employment | Unemployment | | Real GDP | |
|---|---|---|---|---|---|
| | (Millions) | (Percentage points) | | (2009 USD billion) | (Percent) |
| United States | 1.6 | 1.1 | | 503 | 3.5 |
| Germany | 0.5 | 1.1 | | 128 | 3.8 |
| Euro area excl. Germany | 1.3 | 1.1 | | 323 | 3.5 |
| Japan | 0.3 | 0.4 | | 44 | 0.9 |
| Emerging Asia | 3.6 | 0.2 | 1/ | 32 | 0.4 |
| Rest of the world | 2.9 | 0.4 | 1/ | 119 | 0.7 |
| World | 10.2 | 0.7 | | 1150 | 2.0 |

Sources: G-20 authorities and IMF staff estimates.
1/ As unemployment for emerging Asia and rest of the world is not modeled in GIMF, its response to shocks is calculated using the output response for these blocks and assuming the maximum estimated response of unemployment to output of the other blocks.

25. **In the downside scenario, policies would be forced into a reactive stance and not be as effective** (Figure 4). Key reasons are market expectations and political economy constraints.

- *Fiscal consolidation in the event of deteriorating market sentiment and lower potential output would need to be stronger and more front-loaded to try to reassure markets*. On the back of lower potential, public finances would worsen given lower tax revenues and automatic stabilizers, pushing up interest rates with likely adverse feedback effects on growth and confidence.

- *In such an environment, effectiveness of fiscal policy would likely be significantly reduced*. Compared to the upside scenario, much larger fiscal consolidation would be needed to ensure sustainability of public finances. Moreover, credibility would be lacking if fiscal adjustment were forced by adverse market reaction, reinforcing (rather than mitigating) negative demand effects.[12]

- *Moreover, many of the structural reforms in the upside may not be politically feasible in the downside*. While stronger policy responses would be needed in the downside on the structural reform front to boost productivity and labor supply, key entitlement reform, relaxing employment protection, and lowering unemployment benefit replacement rates would likely be out of reach politically.

[12] To make this explicit, the downside scenario assumes little or no credibility for reactive fiscal consolidation. Private sector expectations anticipate rising (not falling) budget deficits.

## V. Benefits and Priorities of G-20 Collective Policy Action

26. **Collective action by the G-20 would entail substantial benefit to the membership by strengthening growth and reducing risk.** Policies that advance progress toward the growth objectives of the G-20 are also the best option toward mitigating downside risk. In other words, strengthened policy actions associated with the upside scenario also help *avoid* the adverse dynamics attached to the downside scenario. Thus, the total benefit or payoff of upside policies can be viewed in this way by comparing the differences in outcomes between these two scenarios. Accordingly, policies associated with the upside should be pursued whether or not signs of the downside emerge.

27. **The analysis thus suggests material and tangible output and employment gains across G-20 members from collective action**. Output and employment gains would be substantial across regions relative to the refined baseline. Specifically, world output would be higher by 1½ trillion U.S. dollars. Accordingly, an estimated 8 million more jobs would be created in advanced economies, and by 12 million in emerging Asia and rest of the world, expanding total employment by 20 million jobs around the globe. Moreover, avoiding the losses associated with the downside scenario would significantly add to the overall gains under collective G-20 action.

28. **G-20 policies should be prioritized to maximize the global benefit**. The list of policy options to credibly strengthen outcomes and mitigate risks is broad ranging across the entire membership, but key priorities stand out that the G-20 should consider toward achieving their shared objectives.

- *On the back of continuing sovereign stress, fiscal consolidation in advanced economies should be a priority*. In the downside, reactive policy action would be less effective and unable to fully access the benefits associated with the upside. Thus, avoiding the downside scenario would be crucial.

- *Also, these economies need to accelerate financial sector repair and reform*. Progress in this area is instrumental for building a stronger financial system, supporting credit provision, and fostering a more rapid return to robust and sustainable growth. Structural reforms in advanced surplus economies would raise their potential, while taking pressure of the public finances.

- *Finally, structural reforms in emerging surplus economies would help rebalance global demand*. Combined with more flexible exchange rates, this would allow for stronger internal demand and more sustainable growth in these countries, given external conditions.

**Box 1. Technical Refinements to the G-20 MAP "Base Case"**

**The refined G20 MAP seeks to resolve two technical issues**. First, it imposes further multilateral consistency to better anchor the alternative scenarios. Second, it reflects recent market and economic developments.

**The analytical framework used to guide the multilateral consistency in the refined MAP baseline builds on the IMF's Global Projection Model (GPM)**.[13] GPM is a theory-based macroeconomic model with trade and financial linkages, featuring nominal and real rigidities in the short run and real business cycle properties in the long run. A particularly useful feature of model in the context of the G-20 MAP is that it produces multilaterally and model-consistent measures of key unobservable variables such as the output gap or the unemployment gap.

**Notwithstanding growing downside risks, the G-20 MAP "bas case" was adjusted upwards over the near term, reflecting better-than-expected developments in the real economy over the past several months**. In particular, in the United States 2010Q1 real GDP growth turned out stronger and labor markets and financial conditions improved more than earlier envisaged. At the same time, in the euro area industrial production expanded rapidly; in Japan activity indicators for the first quarter show stronger consumption growth and much higher than anticipated effects from the fiscal stimulus; and emerging Asia continues on a path of strong and sustained recovery.

**However, the "base case" was adjusted downwards over the medium term, reflecting more conservative estimates of potential output for the advanced countries at the epicenter of the financial crisis**. These estimates are in line with recent empirical findings that show large potential output losses in the aftermath of severe financial crises.[14] Accordingly, real GDP growth in advanced deficit countries at the epicenter of the financial crisis was marked down, bringing it more in line with growth of advance economies further away from the crisis. As a result, accounting for trade linkages, real GDP growth in the euro area, and Japan, emerging Asia, and rest of the world was also scaled down.

**Refined MAP Projections of Real GDP Growth**

(in percent)

| | Diff. from MAP | | | | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2010:2014 Average |
| **World (100.0 %)** [a] | 0.5 | −0.1 | −0.2 | −0.7 | −0.8 | −0.2 |
| United States (20.7 %) | 0.5 | −0.3 | −1.1 | −1.9 | −1.5 | −0.8 |
| Euro Area (15.4 %) | −0.0 | 0.0 | 0.1 | −0.3 | −0.8 | −0.2 |
| Japan (6.2 %) | 1.0 | −0.1 | 0.3 | −0.0 | −0.5 | 0.1 |
| Emerging Asia (23.7 %) [b] | 0.3 | −0.2 | 0.1 | −0.3 | −0.2 | −0.1 |
| Rest of World (34.0 %) | 0.7 | 0.0 | −0.1 | −0.5 | −0.8 | −0.1 |

[a] Share of world GDP by PPP in parenthesis (2007Y-2010Y average).
[b] Includes: China, Hong Kong SAR, India,Indonesia, South Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, Thailand

[13] For a description of the model see: Clinton, K., Garcia-Saltos, R., Johnson M., Kamenik O., and Laxton D., "International deflation risks under alternative macroeconomic policies," Journal of the Japanese and International Economies, 2010, and references therein.
[14] *World Economic Outlook*, Chapter 4, International Monetary Fund, October 2009.

**Box 2. Structural Reform Priorities in G-20 by Thematic Grouping**

**The choice of structural reforms for each thematic grouping is cross-checked with the OECD findings**. This is done by comparing how well the structural reform agenda put forward in the G-20 policy framework aligns with the structural reform priorities identified by the OECD *Going for Growth* report. The outcome of this comparison shows the following:

- For **advanced deficit economies** *policy plans for both product and labor market reforms are well aligned with the priorities identified by the OECD*. Priorities identified by the OECD include for *labor markets:* reforming disability benefit schemes; maintaining a flexible wage bargaining system; improving fiscal incentives for work force participation; and reforming the employment insurance system. For *product markets*, strengthening competition in network industries and improving and streamlining financial regulation.
- For **advanced surplus economies** *policy plans for both labor and product market reforms are broadly aligned with the OECD findings*. The priorities identified by the OECD, include:
    - For *labor markets*, reforming the employment insurance system; reducing the minimum cost of labor; reforming employment protection legislation; reducing implicit taxes on continued work at older ages; reducing average tax wedges on labor income; reducing fiscal impediments to full-time female labor force participation; decentralizing wage bargaining; raising labor mobility within the EU; reforming disability benefit schemes; reducing incentives for the long-term unemployed to stay inactive; and, limiting the extent of administrative extension of collective agreements.
    - For *product markets*, reducing barriers to competition in network industries; further reducing barriers to foreign ownership and to competition in professional services; reducing public ownership; and, strengthening competition in the retail distribution sector.
- For **emerging deficit economies**, *policy plans for both labor and product market reforms are broadly in line with OECD findings*. Priorities identified by the OECD include, for *labor markets*, reduction of job protection in the formal sector, and for *product markets*, plans to reform and simplify product market regulation.
- For **emerging surplus economies**, *policy plans are broadly aligned with the OECD recommendations*. The OECD recommends, for *labor markets*, reduction of restrictions on labor mobility and moderation of the minimum wage, and for *product markets*, reforming product market regulation, reducing FDI restrictions, and further financial and banking reforms.

**The degree of alignment for structural reforms in G-20 policy frameworks with OECD priorities is then used to adjust for the productivity gains in the upside scenario described in Box 3**.

## Box 3. Productivity Gains from Product Market Regulation Reform

**Easing product market regulation (PMR) can enhance total factor productivity (TFP)**. This can occur not only in sectors where such regulation is applied, but also in more competitive industries that rely on intermediate inputs from those sectors. For example, easing regulation in upstream (non-manufacturing) sectors could increase TFP growth in both upstream and downstream (manufacturing) sectors and could have an appreciable economy-wide impact, although estimates vary.

**OECD analysis finds positive effects of reducing PMR restrictions on TFP growth in manufacturing and non-manufacturing sectors**.[1] The simulated impact of moving various OECD countries toward "best practice" in the area of PMR regulation from their 2007 levels is shown in the table. Specifically, the table shows the impact of adopting in 2010 "best practice" PMR regulation on average TFP growth in 2011-15 for various sectors. Best practice is defined as the average of the three levels of regulation least restrictive of competition in each of several specific areas including energy, transport, communication, retail distribution, professional services, and banking. The estimates take into account country-specific degree of regulation, industrial structure, and distance from the technological frontier.

**Average annual MFP growth gains from reforms implemented in 2010, for the period 2011-2015**
In percentage points

| | Manufacturing sectors (15-37) | Non-manufacturing sectors (40-74) | Business sectors* (15-74) | Whole economy** (01-99) |
|---|---|---|---|---|
| Euro area *** | 1.7 | 0.9 | 1.1 | 0.8 |
| Euro area excluding Germany *** | 1.6 | 0.9 | 1.0 | 0.8 |
| Germany | 1.9 | 0.8 | 1.1 | 0.9 |
| Australia | 1.0 | 0.7 | 0.7 | 0.5 |
| Canada | 1.8 | 1.0 | 1.2 | 0.8 |
| Japan | 3.3 | 1.6 | 2.0 | 1.6 |
| Korea | 1.8 | 0.8 | 1.1 | 0.9 |
| Mexico | 1.5 | 0.6 | 0.8 | 0.6 |
| United Kingdom | 1.4 | 0.6 | 0.7 | 0.5 |
| United States | 1.3 | 0.5 | 0.7 | 0.5 |

*: Excluding the farm sector and the mining and quarrying industries/This field corresponds to the sum of the two previous co
**: The calculations for the whole economy assume that reforms to upstream sectors have no effect on the farm sector, the mining and quarrying industries and the non-business sectors.
*** aggregation done using 2010 ppp weights; excludes Cyprus, Ireland, Luxembourg, Malta, Slovak Republic and Slovenia due to data unavailability.

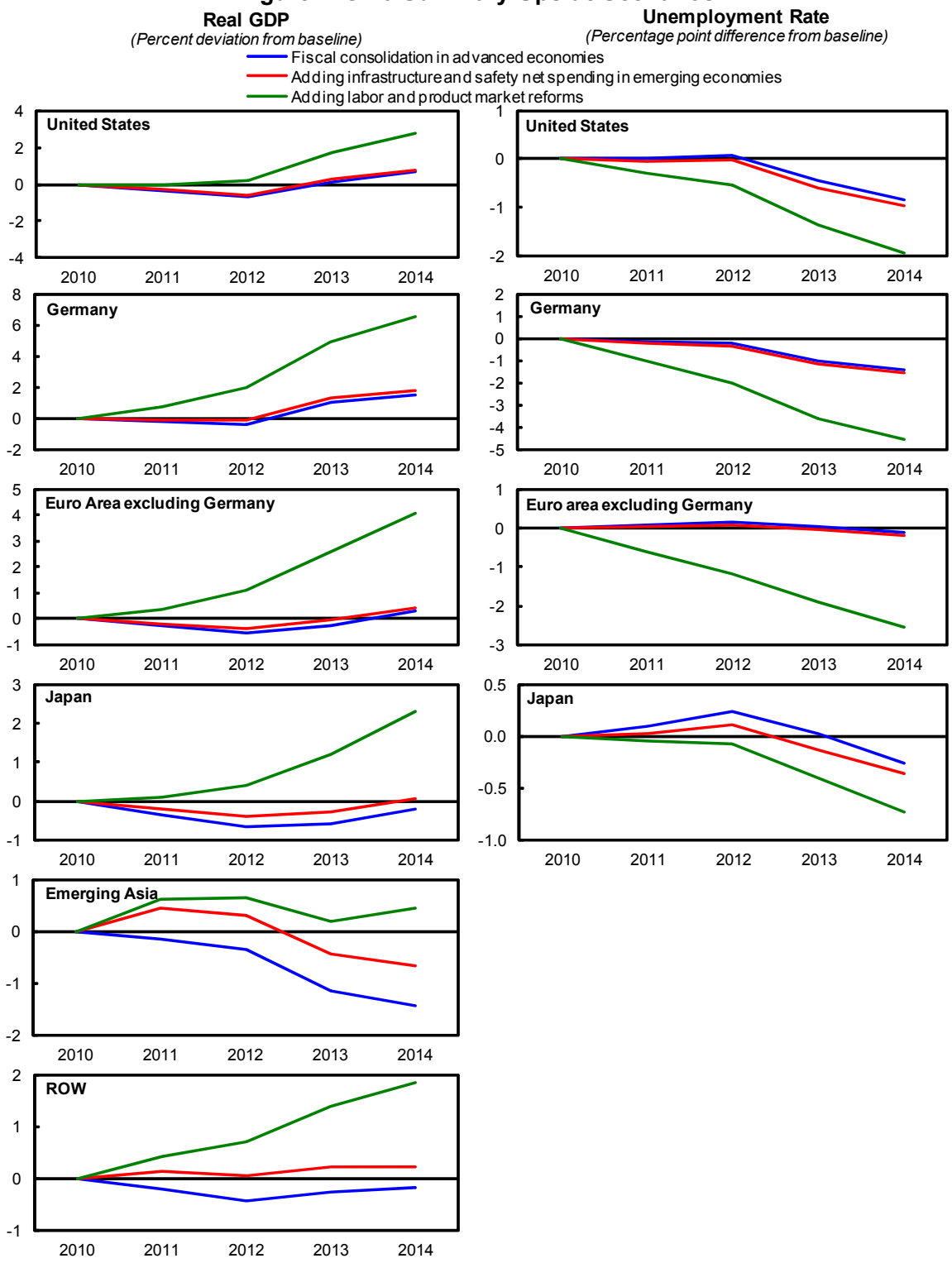
**The OECD has identified concrete policy actions associated with these productivity gains**. Examples of product market reform, as suggested by OECD's *Going for Growth* report, include reducing barriers to competition in network industries, promoting competition in retail distribution services, and simplifying product market regulation.

**The OECD analysis provides the basis for assessing the benefits of product market reform in the upside scenario**. In collaboration with OECD staff, Fund staff incorporated the estimates of product market reforms into the scenario analysis. In the upside scenario, G-20 economies were assumed to implement more far-reaching PMR reforms than assumed in the baseline, over the course of 10 years starting in 2010. Expected productivity gains for advanced G-20 economies were drawn from the OECD estimates, after accounting for gains implicit in the MAP baseline—depending on how well baseline product market reform policies align with key priorities areas.[3] For most emerging economies, sufficient information was not available to perform a similar disaggregated exercise. Here, expected productivity gains were based on a simple relation between improving the overall product market environment, as measured by the OECD economy-wide PMR index (which is available for all G-20 economies except Argentina and Saudi Arabia) and the productivity gains found in the OECD analysis.[2]

[1] R. Bourlès, G. Cette, J. Lopez, J. Mairesse and G. Nicoletti (2010) "Do Product Market Regulations in Upstream Sector Curb Productivity Growth? Panel Data Evidence for OECD Countries", *OECD Economics Department Working Papers* (forthcoming).
[2] "Distance-to-the-frontier" effects suggest that the imputed gains for non-OECD countries may be an upper bound.
[3] To credit the effects of base case structural policies, productivity effects in the upside were scaled down by ½ or ¾ for policies that were respectively "broadly aligned"; and "well aligned" with OECD priorities (or already at "best practice"). No scaling was done for countries where structural reforms in the base case were "not well aligned."

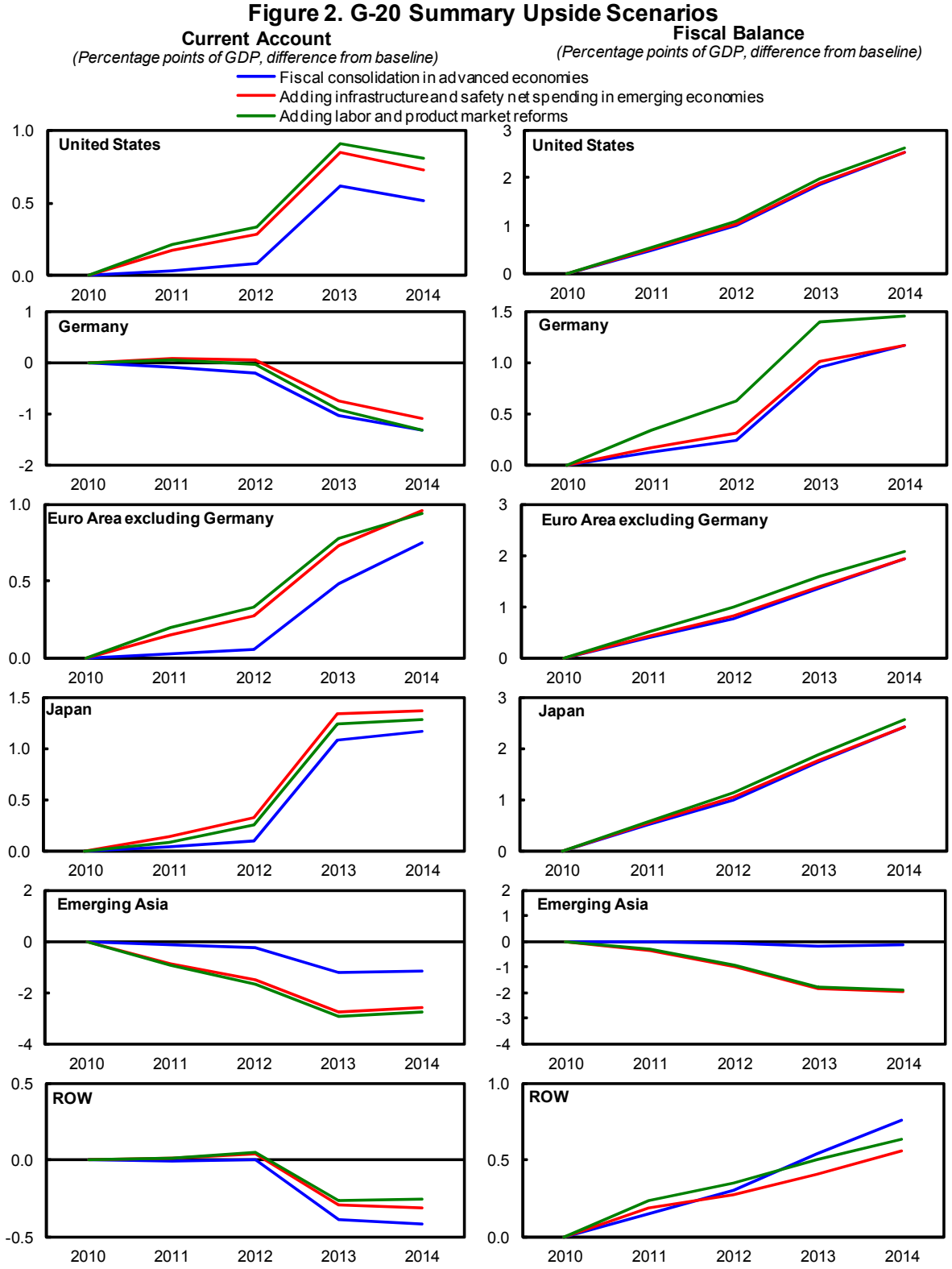
## APPENDIX I. CHARTS AND TABLES

### Figure 1. G-20 Summary Upside Scenarios



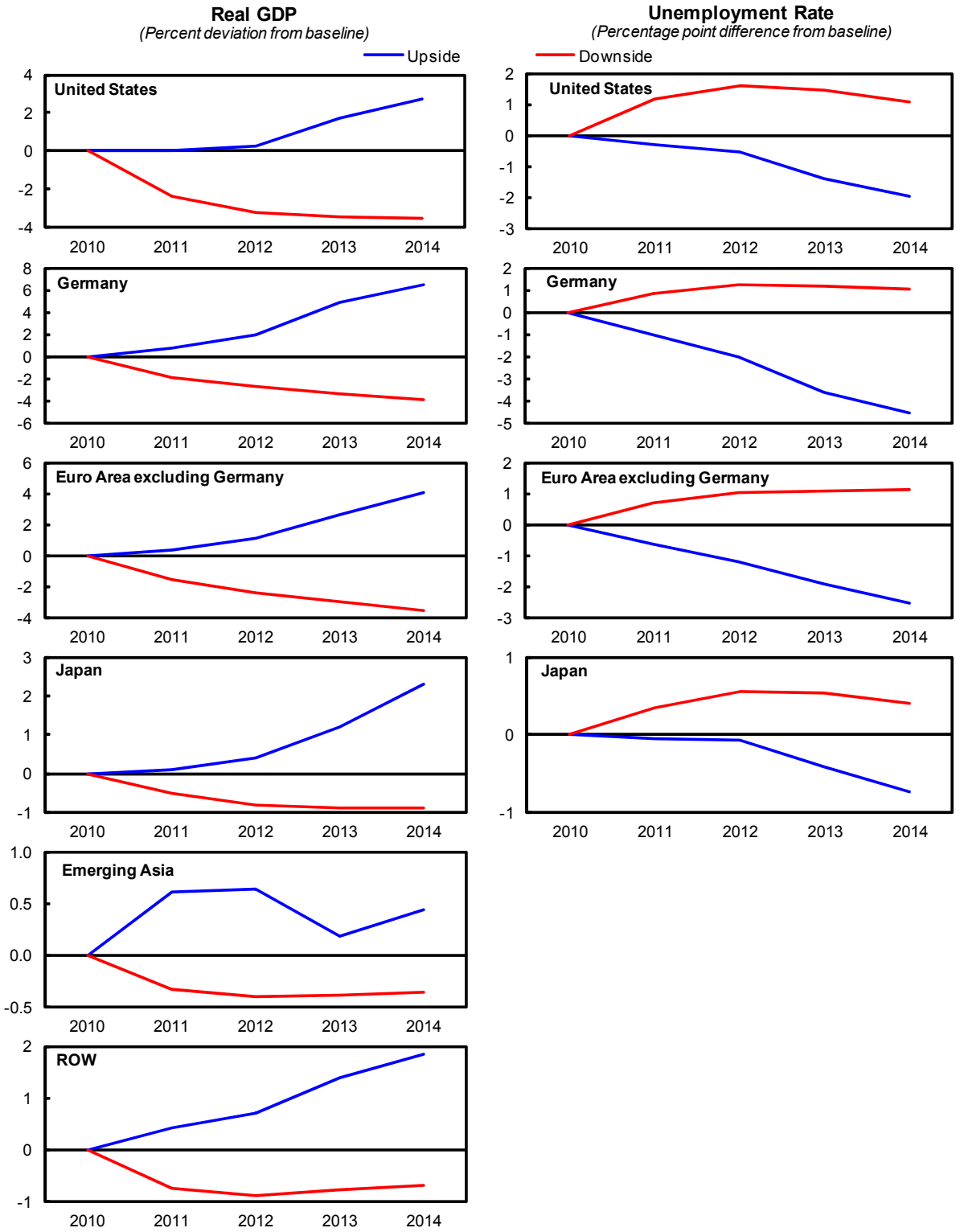

Sources: G-20 authorities and IMF staff estimates.

## Figure 2. G-20 Summary Upside Scenarios



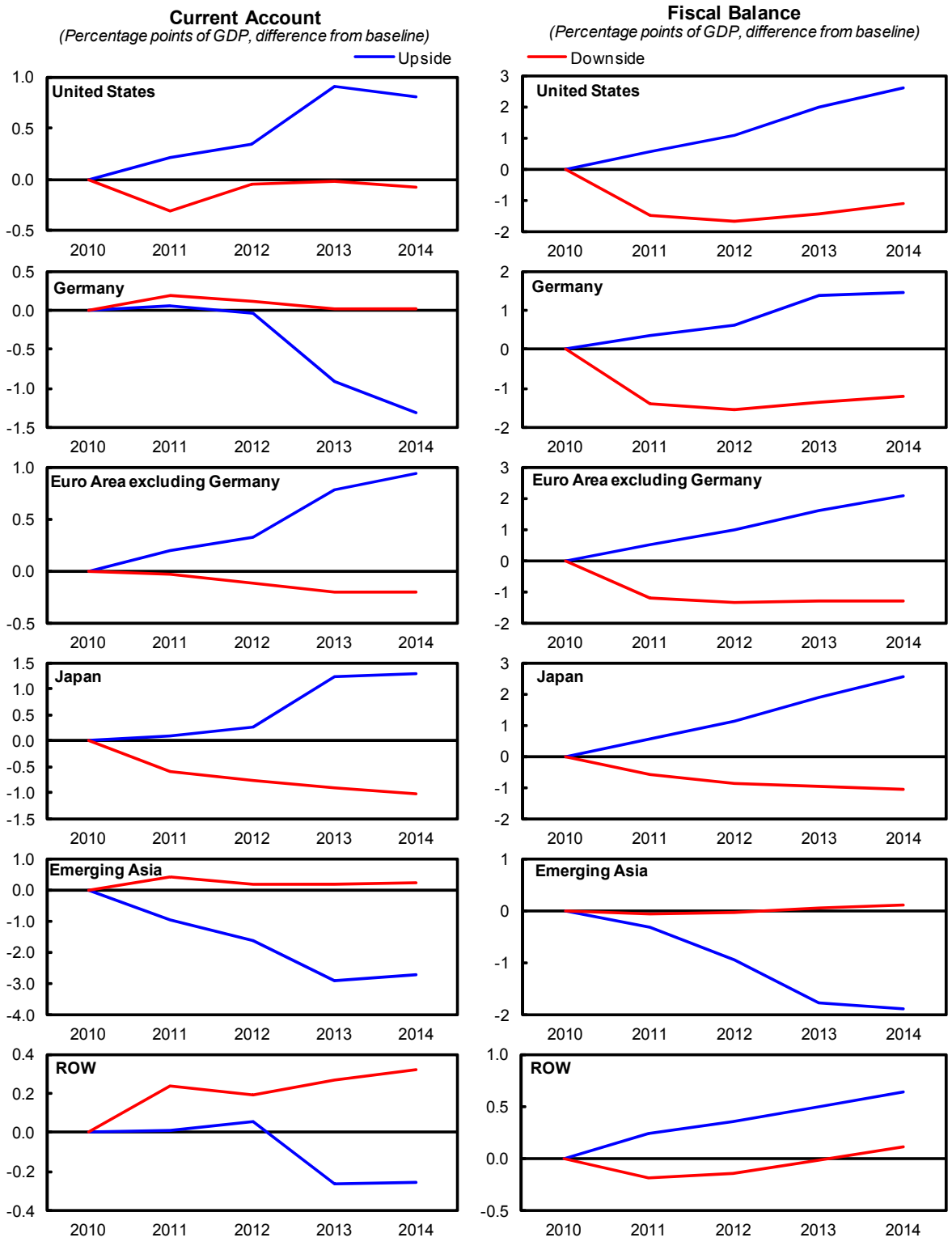

Sources: G-20 authorities and IMF staff estimates.

## Figure 3. G-20 Upside versus Downside Scenario




Sources: G-20 authorities and IMF staff estimates.

## Figure 4. G-20 Upside versus Downside Scenario




Sources: G-20 authorities and IMF staff estimates.