PPHP Scenario Annotations

PPHP1 *Reducing Global Poverty*

In *Reducing Global Poverty*, we created scenarios based on the exploration of internal levers affecting poverty levels, both domestic and international.

- The **POVERTY COMBINED DOMESTIC INTERVENTIONS** scenario included fertility reduction, high female labor, high investment, high education expenditure, effective government, free markets, high infrastructure, high renewable energy development, increased research and development spending, low protection, and high domestic transfers supporting the incomes of the poor.
- The **POVERTY COMBINED INTERNATIONAL INTERVENTIONS** scenario included high trade openness, export promotion, increased foreign direct investment, high portfolio investment, increased workers remittances, high foreign aid, larger flows via International Financial Institutions (IFIs), and high technology transfer.
- The **POVERTY COMBINED DOMESTIC AND INTERNATIONAL INTERVENTIONS** scenario included levers from both the domestic and international interventions explained above.

PPHP2 *Advancing Global Education*

The **EDUCATION NORMATIVE** scenario in *Advancing Global Education: Forecasting the Next 50 Years* rests on two types of leverage points: (1) target rates of annual growth in student flows at primary and secondary levels; and (2) target per-student costs at each level of education. We first consider student flow targets and the impact they would have on enrollment rates and adults' attainment levels if there were no budgetary constraints to their implementation. After that, we consider per-student targets and the incremental resource requirements of the normative scenario if budgetary constraints are reintroduced to the scenario.

PPHP3 *Improving Global Health*

Improving Global Health includes four very different global health futures within a scenario space whose axes are biology and human activity: Luck and Enlightenment, Steady Slog, Unexploited Opportunity, and Things Go Wrong. Our focus in the volume is a comparison of the optimistic Luck and Enlightenment (**ALL DRIVERS GOOD**) and pessimistic **THINGS GO WRONG** (TGW) scenarios. Our assumptions incorporate elements aimed at capturing variations in technology (via a 50 percent increase or decrease over time in the pace of mortality reduction due to technology compared to the base case) and in our proximate drivers of health (via a one standard error increase or decrease in each proximate risk factor compared to the base case, again phased in over time).

- To better capture potential positive human action affecting proximate risks beyond the eight included in IFs, in **HEALTH ALL DRIVERS GOOD ADJUSTED BASE** we also allow those countries that are currently underperforming projections based on our formulations to gradually converge toward expectation.
- Two further adjustments capture a realistic **HEALTH THINGS GO WRONG** scenario, especially for low-income countries. First to account for lingering effects of the Great Recession (2008-2011 in the IFs base case), we model lower GDP growth rates in all countries, with greater reductions in GDP growth rates in low-income countries. Finally, TGW incorporates slowed reductions in communicable disease mortality, particularly for HIV/AIDS.

PPHP4 *Building Global Infrastructure*

For *Building Global Infrastructure: Forecasting the Next 50 Years*, we created a series of alternative scenarios in order to explore the effects of actively pursuing accelerated infrastructure development. We started with the target of achieving universal access to all basic infrastructure types by 2030 and considered

both a case in which countries had to achieve the target with domestic resources and one in which money was assumed to be available from an alternative, unspecified source.

The results of these scenarios led us to explore scenarios in which we modified the universal targets by: (1) relaxing the time horizon for achieving the targeted level of access; (2) specifying the target level for each country as being a function of its general level of development, measured primarily by its average GDP per capita (in purchasing power parity dollars); and/or (3) prioritizing some forms of infrastructure over others. These scenarios include:

- Delayed Universal Targets (**INFRASTRUCTURE UNIVERSAL 2050 TARGETS**), which extends time horizon for meeting universal access goals to 2050 instead of 2030;
- Meet Expectations, which links targets to a country's level of development, with countries aiming to provide the level of infrastructure expected for their level of GDP per capita;
- High Performance (**INFRASTRUCTURE GOOD PERFORMANCE 2050 TARGETS**), which links targets to a country's level of development, with countries aiming to provide the level of infrastructure expected for the best performing countries with the same level of GDP per capita; and
- Prioritized target scenarios, which use the same targets as in Universal Targets Pursuit, but each one prioritizes a single infrastructure form (all-season road access, improved water and sanitation, electricity, or ICT).

PPHP5 *Strengthening Governance Globally*

For the final publication in the Patterns of Potential Human Progress series, *Strengthening Governance Globally*, we created a series of scenarios based on global challenges to governance and strengthened governance and policies. This series includes the following three primary scenarios, in addition to combinations of the three:

- **GLOBAL CHALLENGES** – In this scenario, we recognize that because the world is facing unprecedented challenges, the mental and computer modeling of these challenges and of their impacts, including their representation in the IFs system, is work in progress. We identified five categories of variables that we should consider: slowing of technological progress; nonrenewable resource depletion; environmental system insult; social failures; and surprises or "wild cards." We built our Global Challenges scenario on the first four of these. Wild cards are inherently unforeseeable, but potentially could considerably worsen the scenario.
- **GLOBAL CHALLENGES PLUS STRENGTHENED GOVERNANCE** – Except for the elimination of internal conflict, this scenario does not move countries to "perfect" governance values, but rather to aggressive yet reasonable values given each country's level of development. The following is changed, relative to underlying dynamic values of the Global Challenges scenario, in this scenario:
  - The probability of intrastate war declines to 0.0 over 20 years.
  - General government revenues increase in non-OECD countries by 10 percent (about three percentage points of GDP on average) over 20 years relative to the Base Case. The scenario globally reduces corruption, increases government effectiveness, and increases regulatory quality over 10 years to one standard error above values typical for each country's level of per capita GDP.
  - Over 10 years, the measures of democracy and gender empowerment move to one standard error above values typical for each country's level of per capita GDP.
- **GLOBAL CHALLENGES PLUS STRENGTHENED GOVERNANCE AND POLICIES** – The scenario largely combines the aggressive yet reasonable interventions explored in the first three volumes in this series, in combination with the **GLOBAL CHALLENGES PLUS STRENGTHENED GOVERNANCE SCENARIO** above. The following components are altered:
  - Government spending on education, health, and R&D is increased 20–80 percent, depending on the country.
  - There is an acceleration of the movement toward gender equality in education. There are also steady improvements in a variety of proximate drivers of health, including increased access to safe water and improved sanitation, and reductions in indoor use of solid fuels, urban particulate

pollution, smoking, undernutrition, and obesity. Growth in renewable energy production is about half-again that of the underlying scenario.

- **STRENGTHENED GOVERNANCE AND POLICIES SCENARIO** – The scenario adds the strengthened governance and policies elements of the scenario described above to the Base Case of IFs rather than to the GLOBAL CHALLENGES scenario