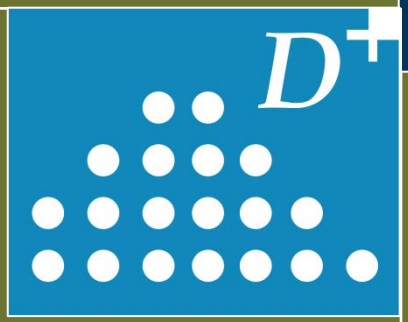
Modeling the Demographic Dividend: DemDiv



Scott Moreland, Bernice Kuang, Kaja Jurczynska (Palladium)

Elizabeth Leahy Madsen (Population Reference Bureau)

Demographic Dividend and African Development: 11th Global Meeting of the NTA Network,
Saly, Senegal, 20-24 June 2016

USAID FROM THE AMERICAN PEOPLE

MEASURE Evaluation

HEALTH POLICY PROJECT

The demographic dividend is:

- The accelerated **economic growth**
- That begins with a change in population **age structure**
- And is achieved through strategic investments and **policies**

How does a *demographic transition* cause a *demographic dividend*?

The dependency effect: When the dependency rate falls, it permits an increase in income per capita

The life-cycle-savings effect: A larger population at working age relative to the dependent (young) population can save more, which results in higher levels of investment

The experience effect: An increase in productivity may result from a more mature and experienced population

The labor force participation effect: Higher labor-force participation may result when there are fewer dependents, thus boosting the labor force

The demographic dividend is not automatic; it requires 4 key elements

- Favorable population age structure
  - Large working-age population (15+ years old)
  - Small dependent population (0–14 years old)
- Investments in education
  - Completion of primary and secondary education, especially for girls
- Sound labor market and economic policies
- Good governance

Purpose of the DemDiv Model

- Build on the longstanding interest in the relationship between population growth and economic growth
- Quantify specific policies that may help a country achieve a demographic dividend
- Demonstrate that multisectoral, interacting policies are more effective than emphasizing any single sector
  - Realizing a dividend requires economic and human-capital policies in addition to demographic ones
- Target audience: Influential policymakers outside the health sector
  - Appropriate for any high-fertility country

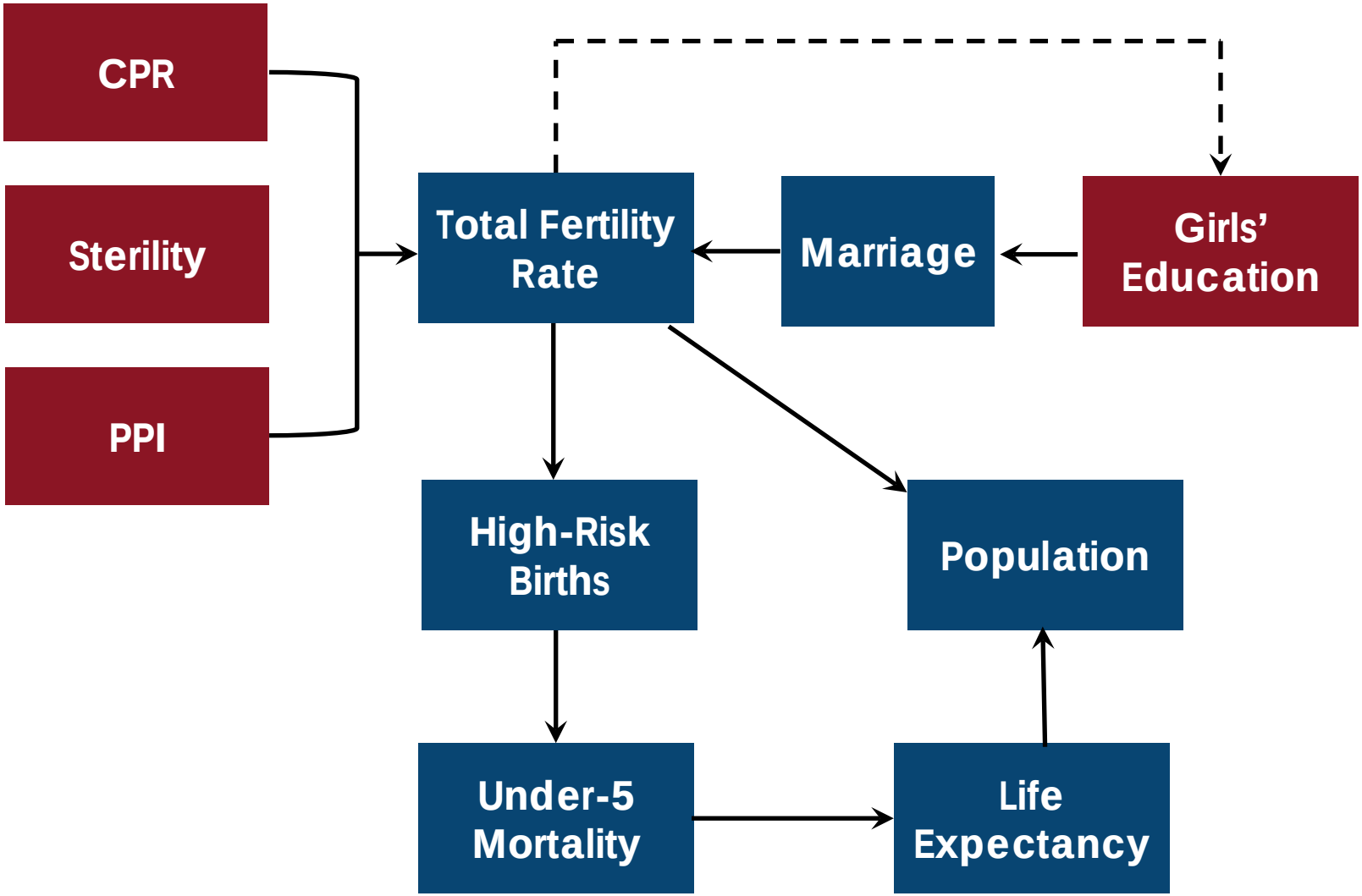
DemDiv basics

- Core model relating family planning, population age structure, investment, employment, and income/productivity
- Statistically rigorous and evidence-based
- Makes projections for multiple scenarios
- Adaptable to each country's context
- Accessible to diverse audiences
- No special or proprietary software
- Data available from public sources

Model structure

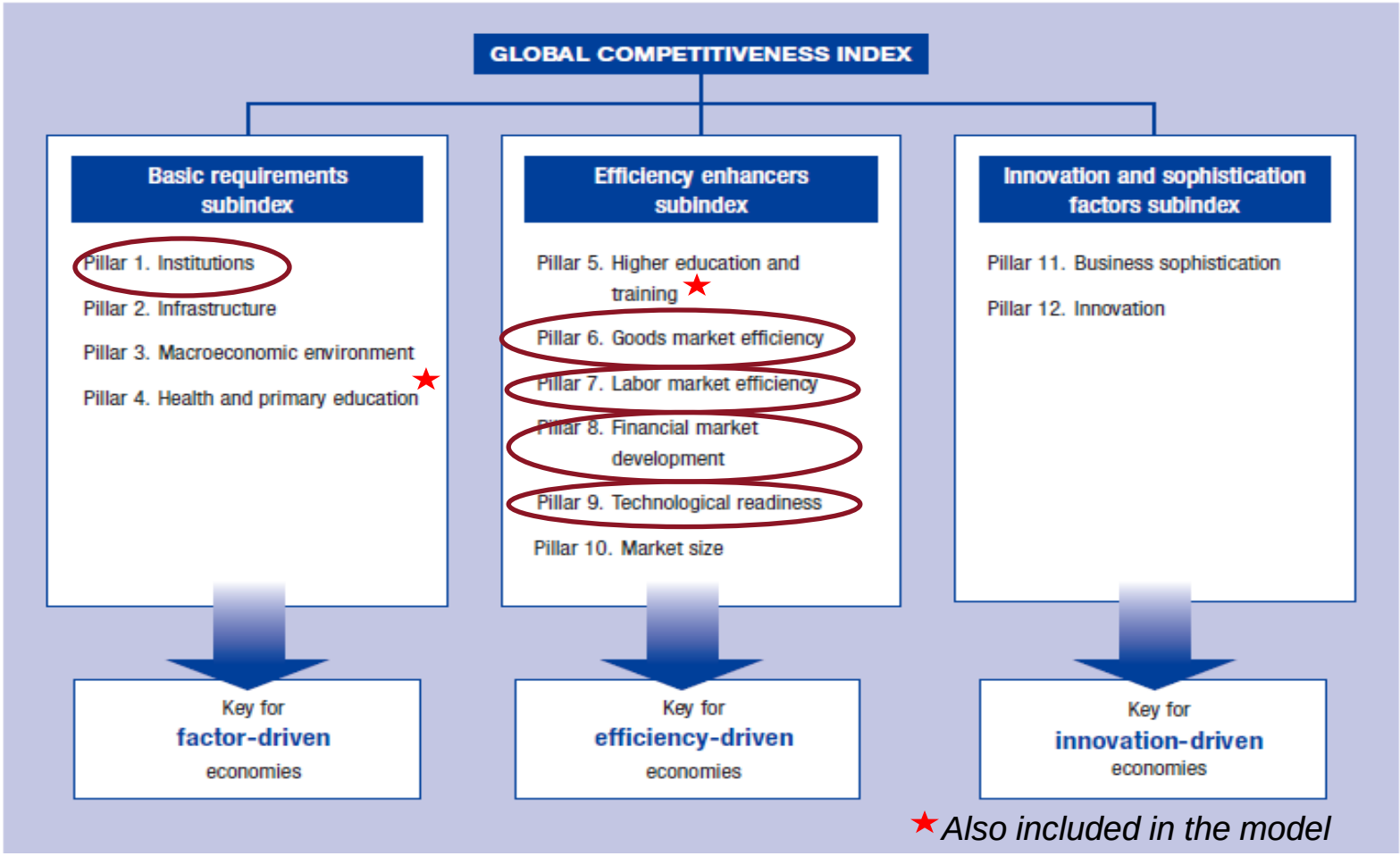
- Two linked sub-models: Demographic and economic
- User designs up to three policy scenarios for the future, plus a base scenario
- Uses cross-national regression to estimate social and economic indicators and quantify impact of changes in them
- Standard projection period is 2010 to 2050—can be adjusted
- Uses Microsoft Excel, automatically linked to the DemProj model in Spectrum

Demographic sub-model



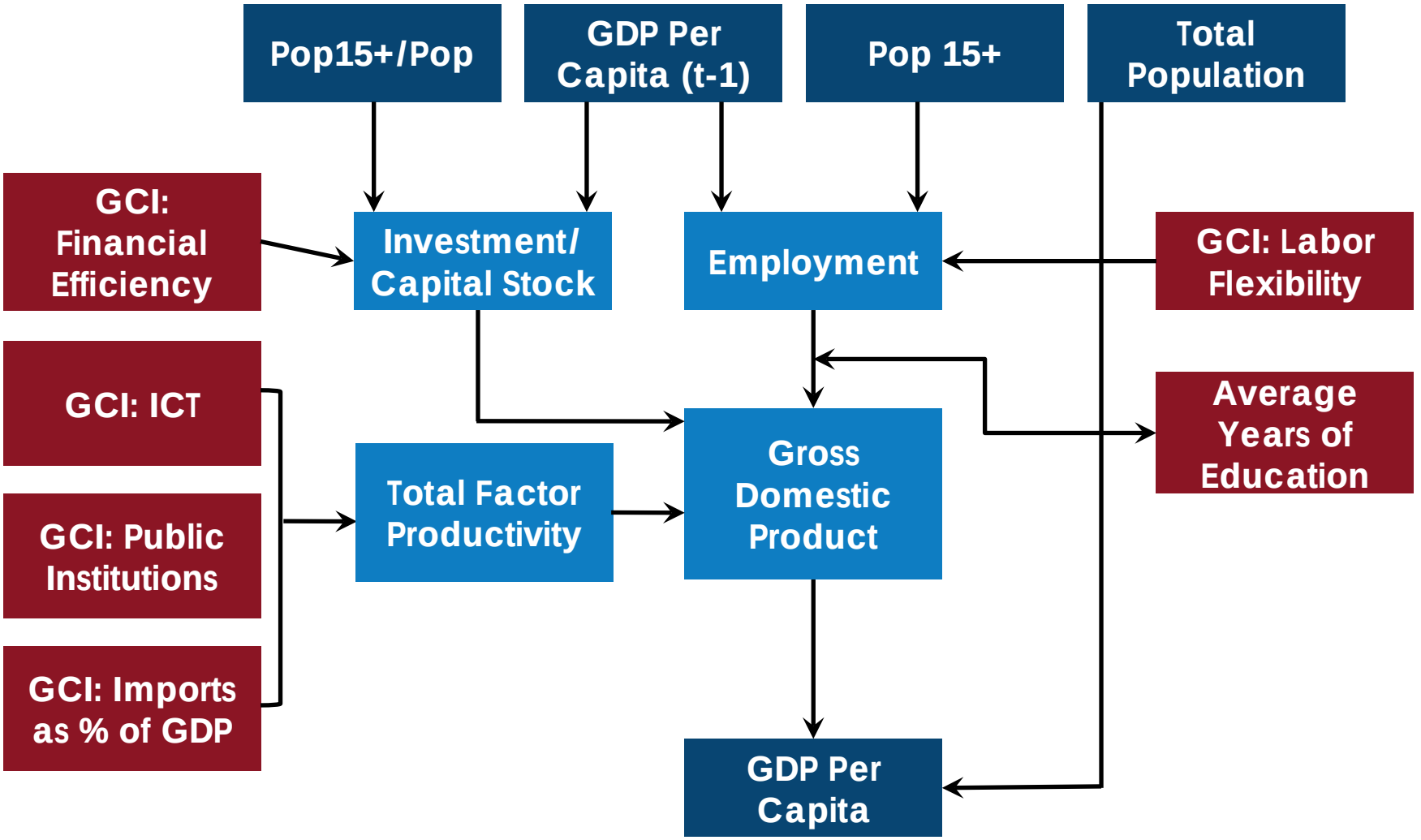
The Global Competitiveness Index

Figure 1: The Global Competitiveness Index framework



Schwab, K. 2013. The Global Competitiveness Report 2013–2014: Full Data Edition. Geneva: World Economic Forum.

Economic sub-model



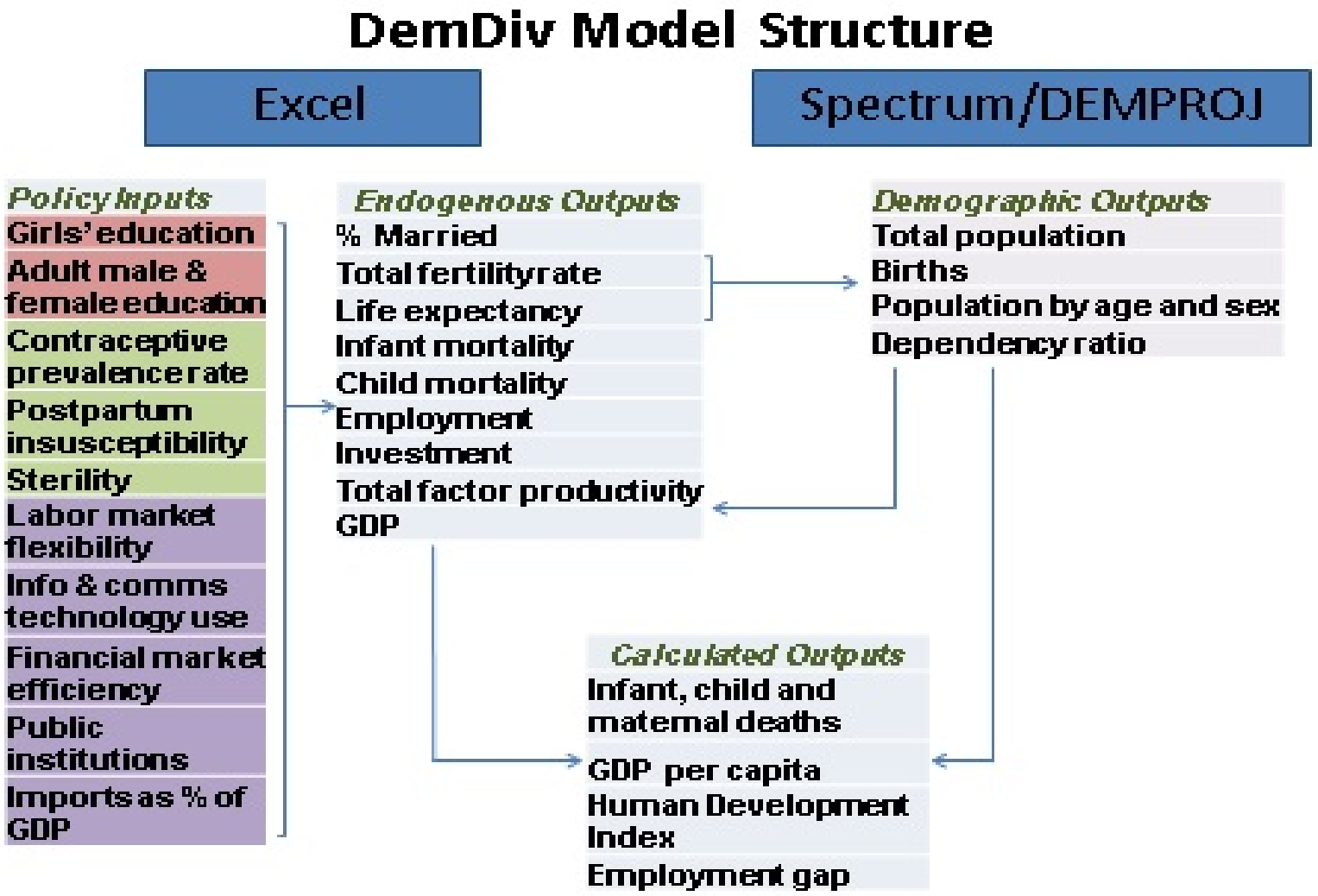
Applying the model is a participatory process

- Work through our local offices and advisors
- Establish a technical working group, normally with strong multi-sector linkages (Health, Planning, Economy, Finance, Labor…)
- Often collaborate with other donors (DFID, UNFPA…)
- Maximize use of local data
- Use country-defined scenarios
- Include advocacy and dissemination by country teams

DemDiv main inputs and outputs

Inputs	Outputs
Financial market efficiency	Population by age and sex
Labor market flexibility	Dependency ratio
Public institutions	Infant, child and maternal mortality
Imports as % of GDP	Fertility rate
Information & communications technology use	Life expectancy
Male and female education	Labor force by age and sex
Family planning	Employment
Girls' education	Investment
	GDP and GDP per capita
	GDP growth rate

DemDiv and DemProj



Model applications to date

- Kenya
- Uganda
- Ethiopia
- Burkina Faso
- Cote d'Ivoire
- Nepal
- South Africa
- Tanzania
- Malawi
- Nigeria
- Zambia
- Senegal

DemDiv results: Kenya

“A globally competitive and prosperous nation with a high quality of life”

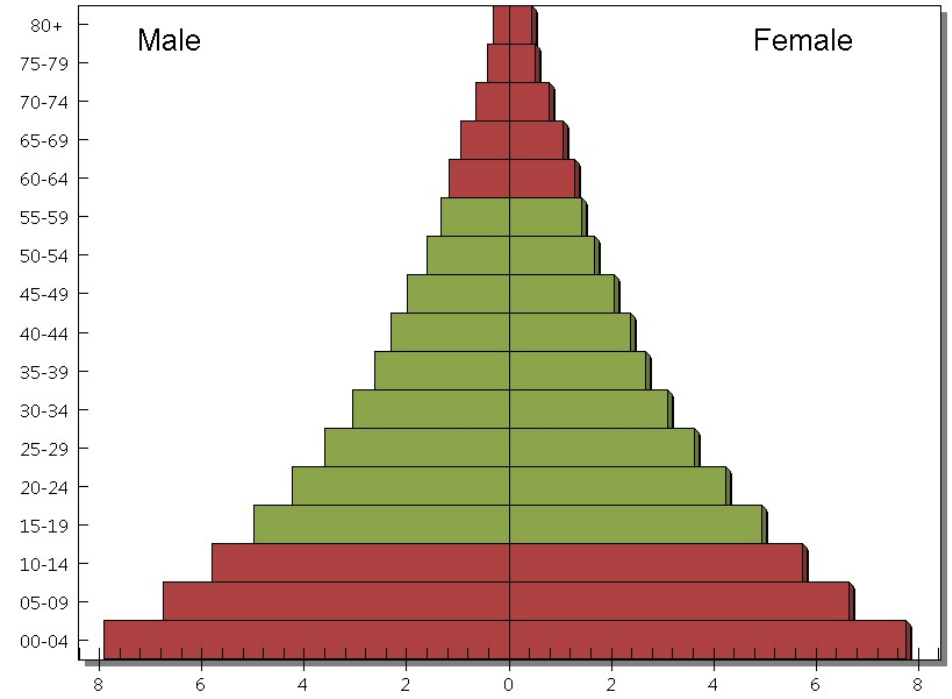
Kenya Vision 2030

Four policy scenarios

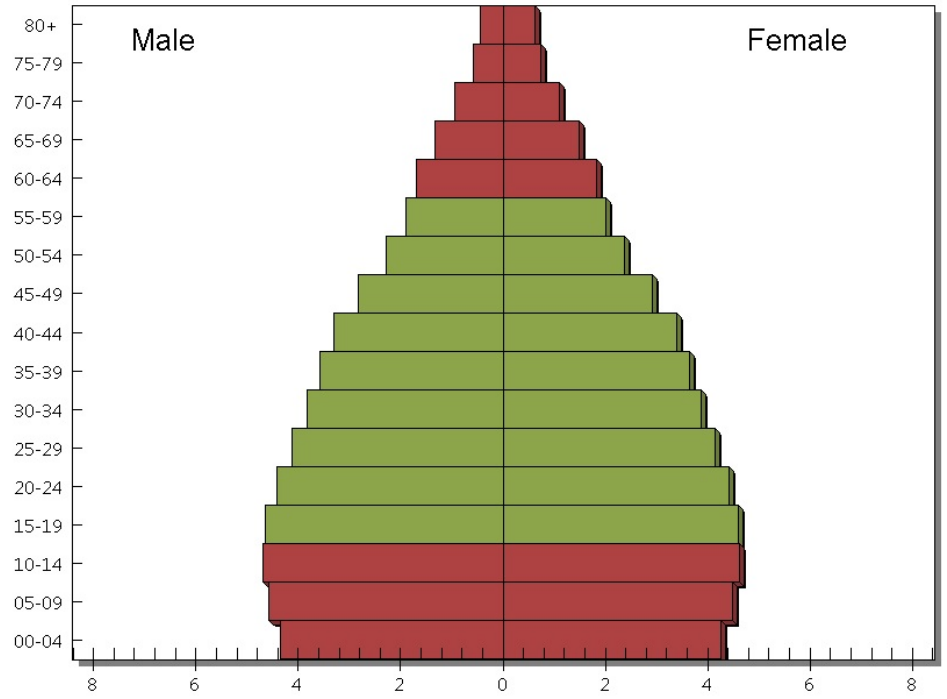
Scenario	Key Characteristics
Base Case	▪ No change in any variable between 2010-2050
Economic Only	▪ Improvements in financial market efficiency, ICT use, imports, labor market flexibility, and public institutions ▪ Economic indicators improve to match current levels for Malaysia
Economic + Education	▪ In addition to economic improvements, educational attainment improves ▪ School life expectancy for girls increases from 11 to 16 years
Combined: Economic + Education + FP	▪ FP improvements layered on top of economic and education changes ▪ MCPR increases from 39 to 70% by 2050

The combined scenario of economic, education, and FP policies produces a “youth bulge”

2050 base scenario



2050 combined scenario

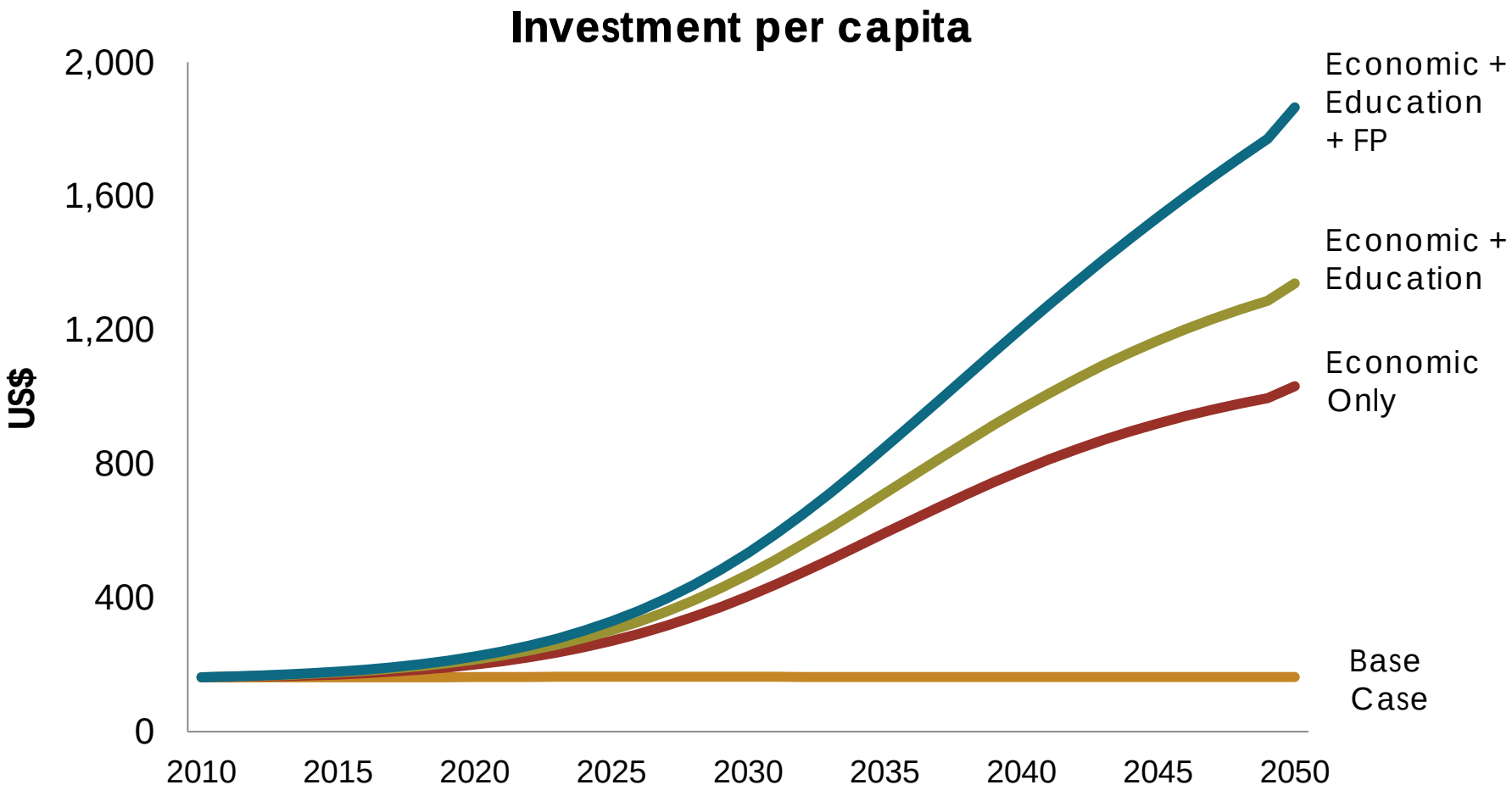


Percentage of Total Population

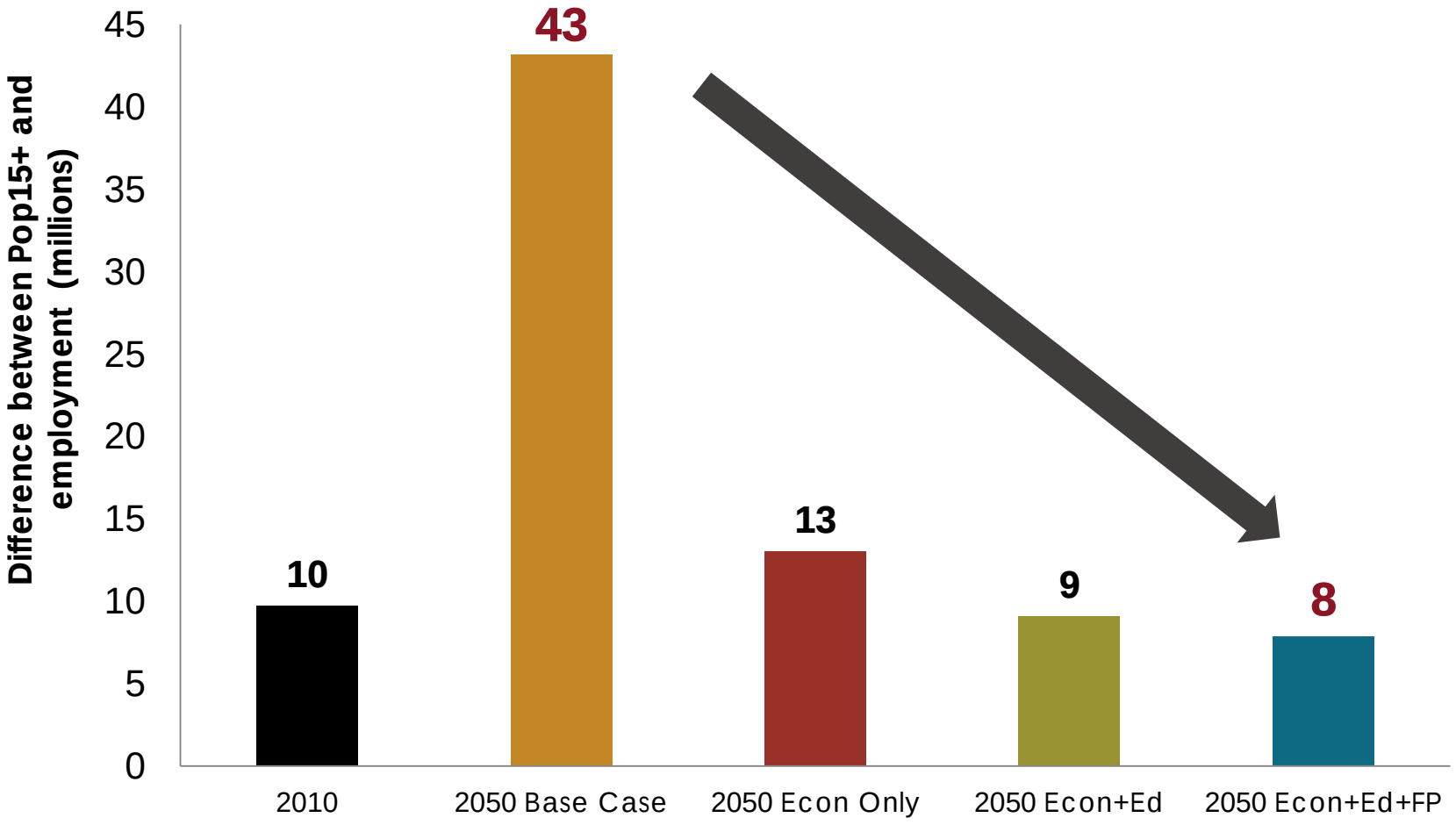
With constant fertility, Kenya’s age structure remains very young and is dominated by dependents

The Economic+Education+FP scenario produces a large potential labor force with fewer dependents to support

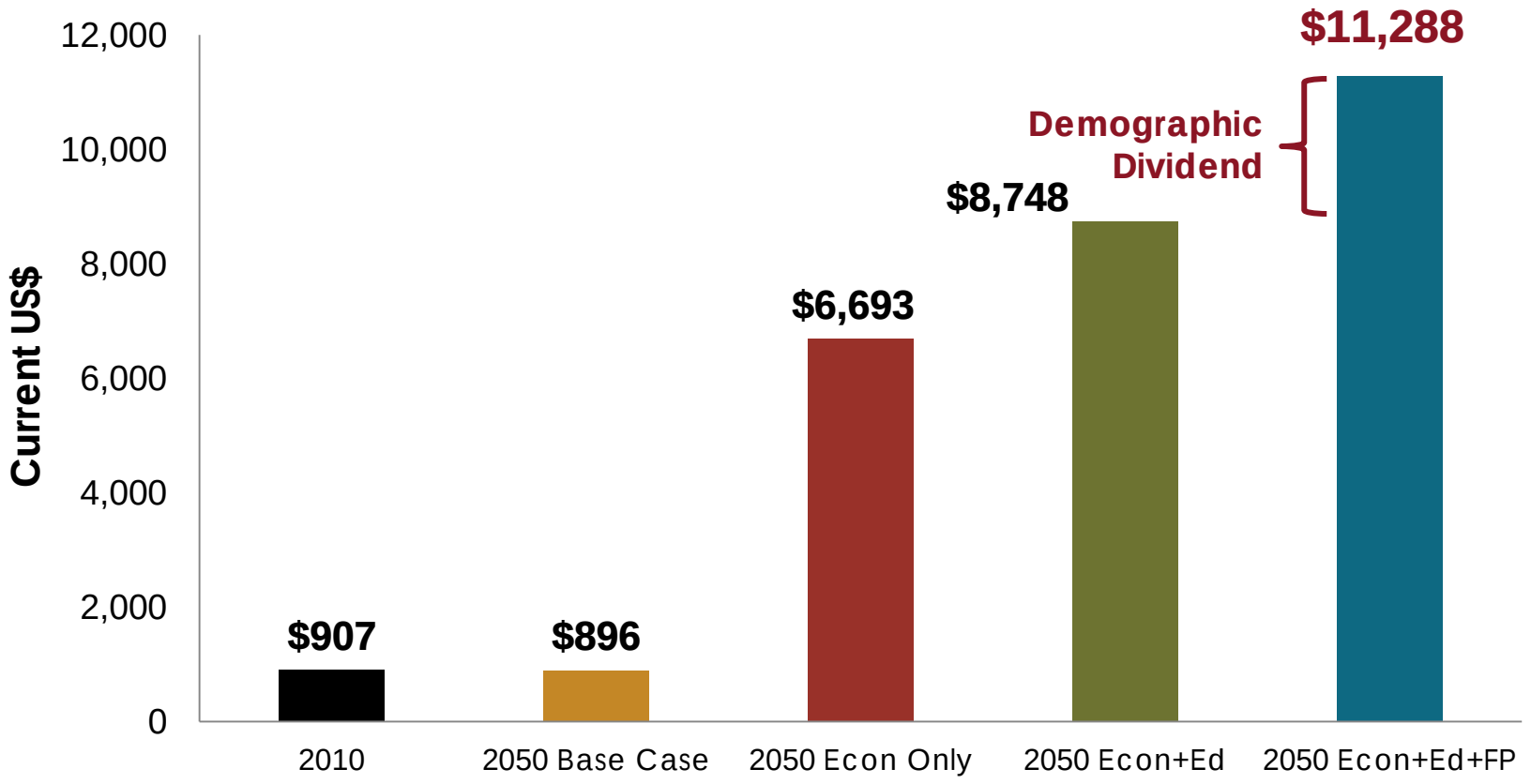
Combined economic, education, and FP policies yield a higher level of investment



Combined economic, education, and FP policies produce the smallest gap between employment and Pop 15+



With higher investment and employment, **GDP per capita** is larger in the combined scenario



DemDiv Kenya dissemination

- Launched in Nairobi in July 2014 by Dr. Rachel Nyamai, MP, Chair of the Parliamentary Committee on Health
- Launched in Nyeri and Kakamega Counties, July-August 2014

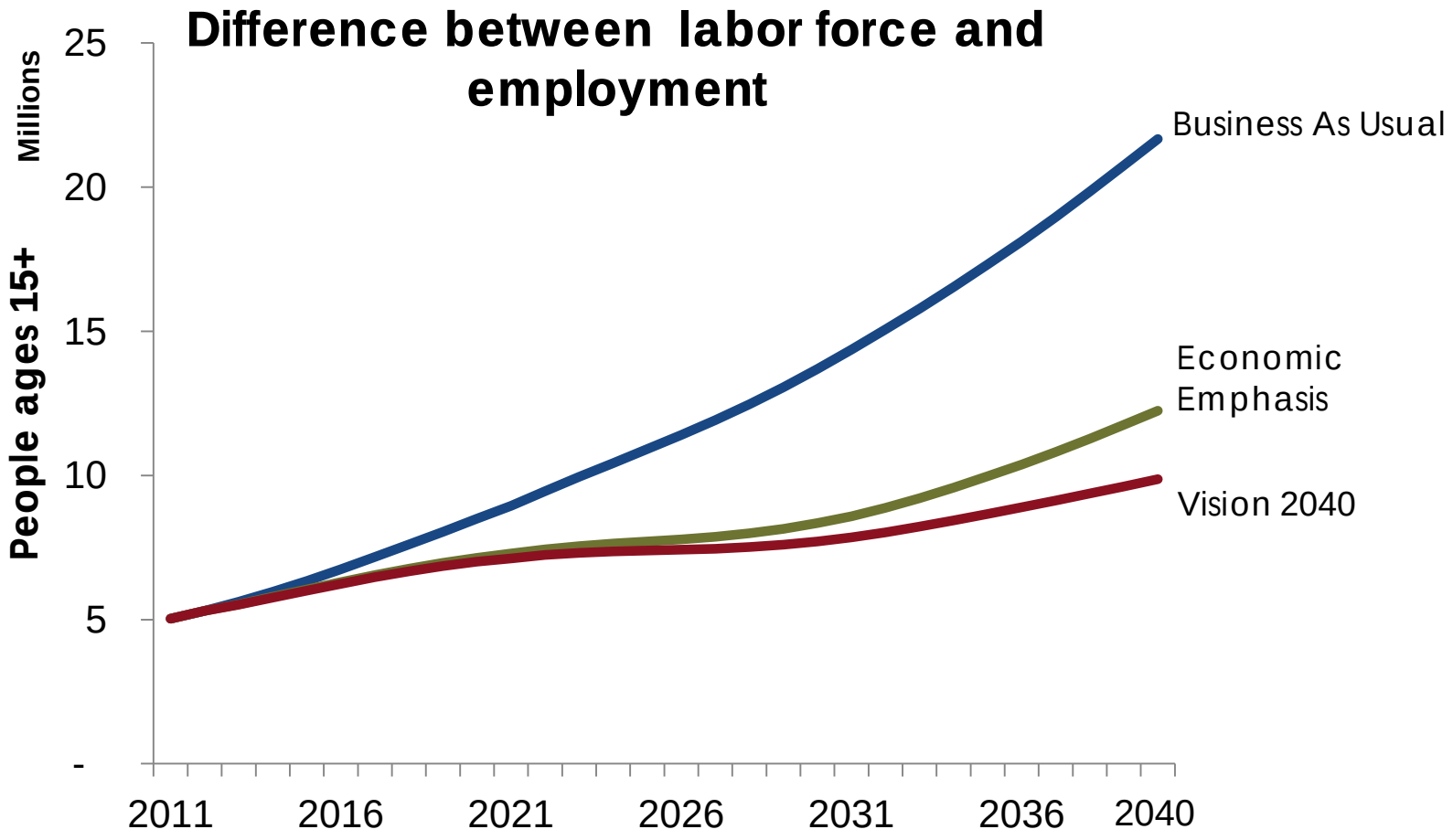
Credit: Health Policy Project/Kenya

DemDiv results Uganda

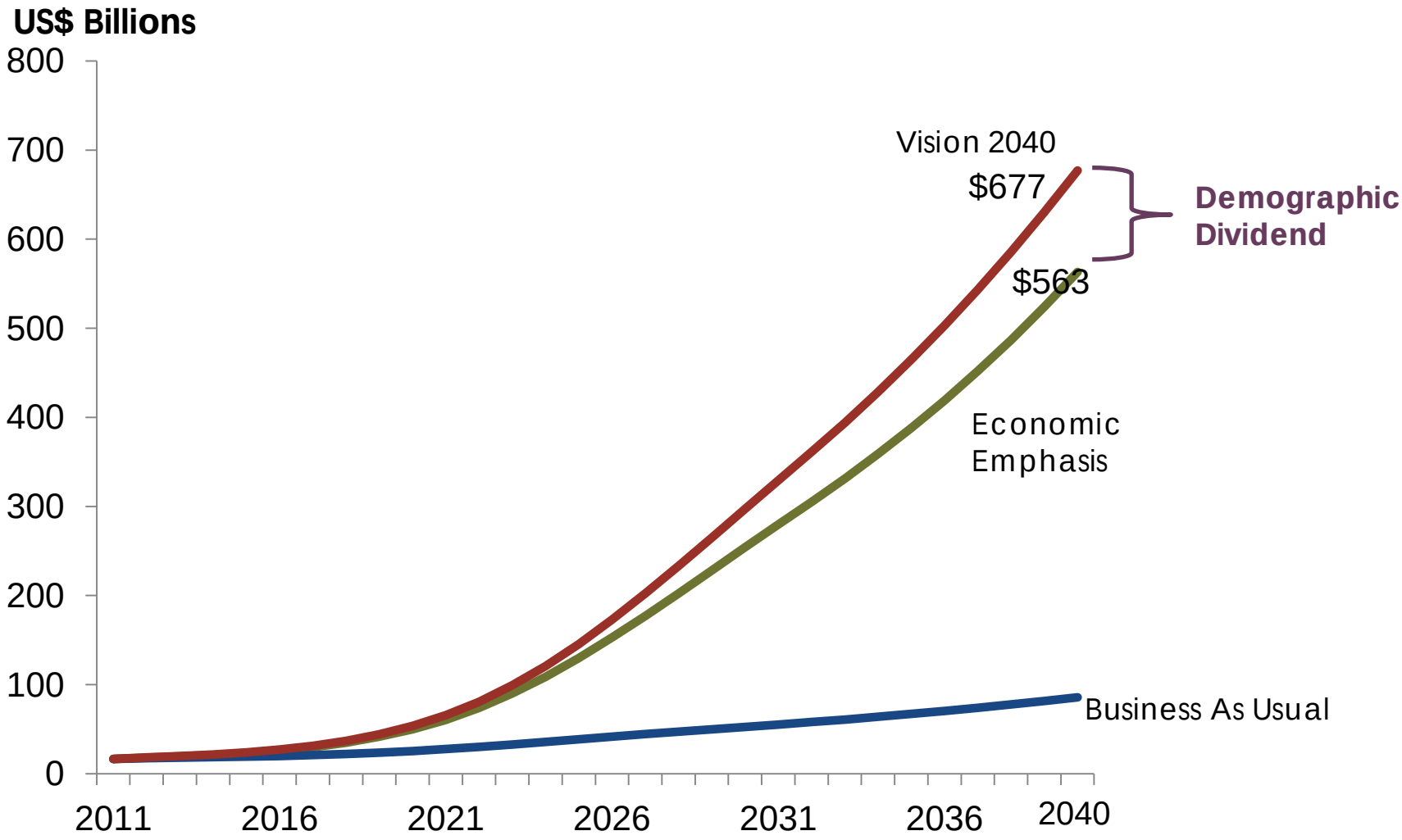
Three policy scenarios

Scenario	Key Characteristics
“Business As Usual”	▪ Make modest investments in family planning, education, and economic reforms ▪ Continue slow progress in economic development and demographic transition
Economic Emphasis	▪ Maximize economic competitiveness to the level envisaged in Vision 2040 benchmark countries ▪ Make modest investments in family planning and education
Vision 2040	▪ Maximize economic competitiveness to the level envisaged in Vision 2040 benchmark countries ▪ Simultaneously prioritize family planning and education to the Vision 2040 benchmark levels

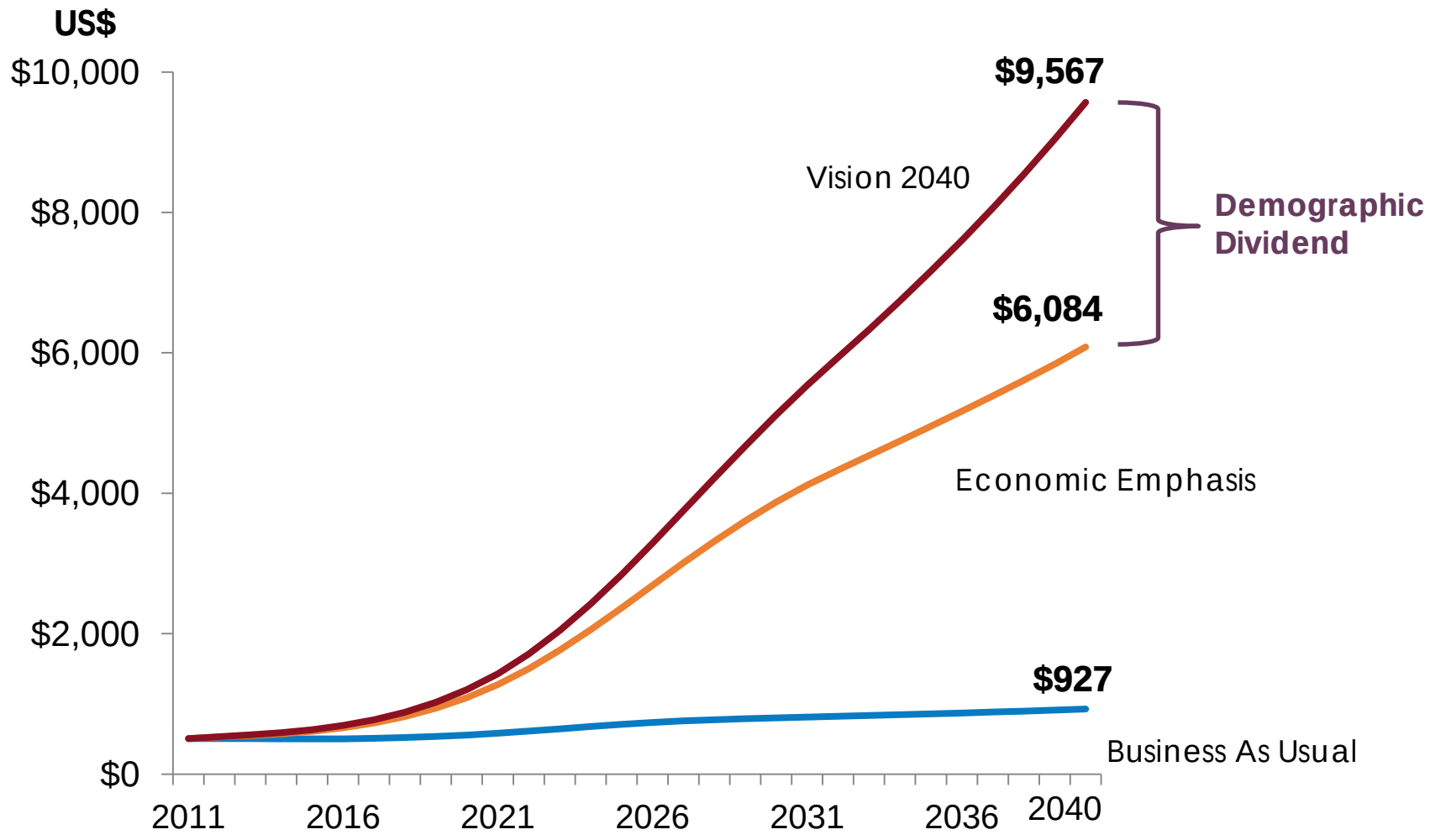
Employment gap



Gross Domestic Product



GDP per capita



DemDiv Uganda dissemination

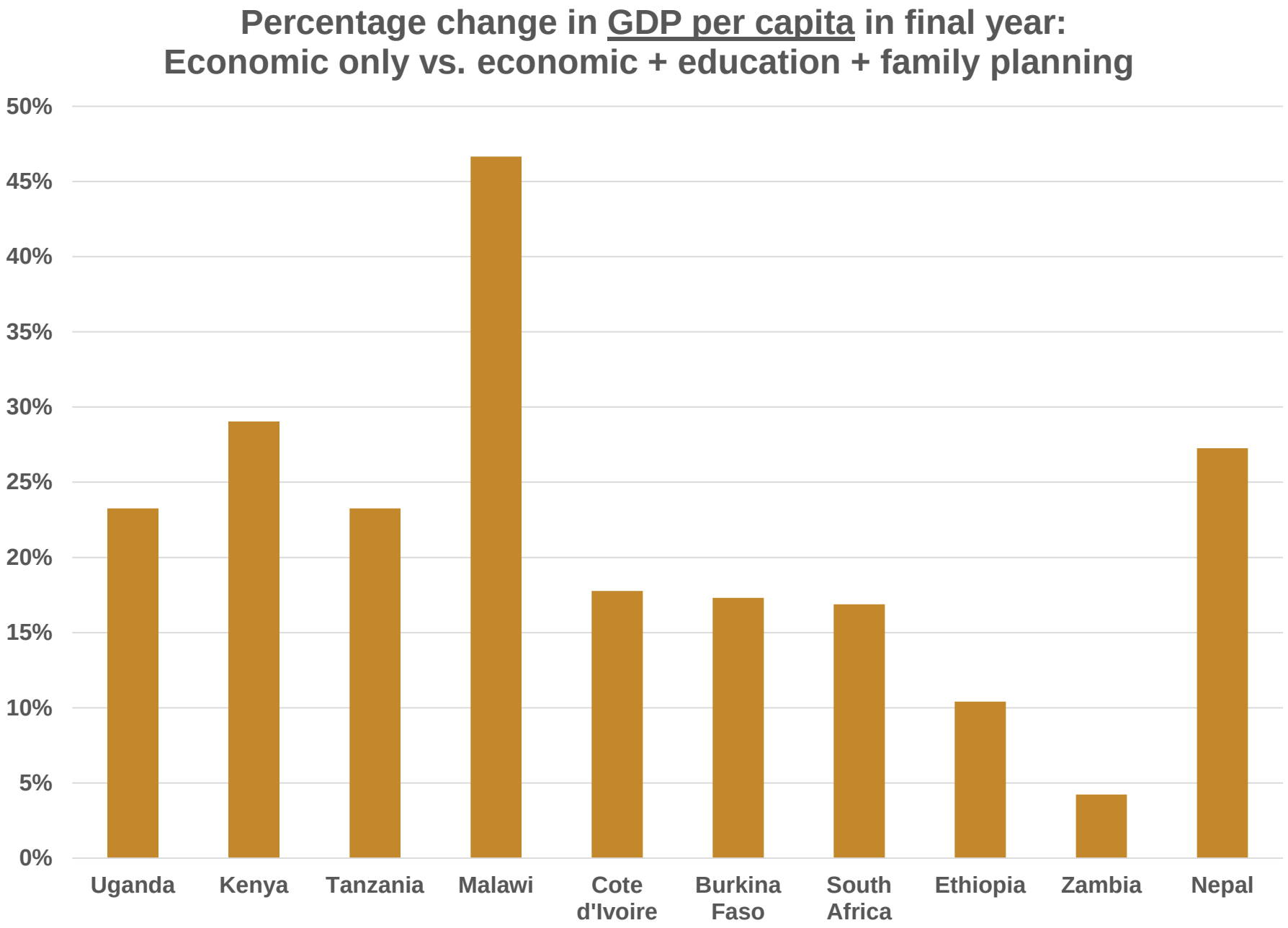
- Launched at the National Population Conference in July 2014
- Results included in NPA DD report signed by Pres. Museveni

Credit: United Nations Population Fund

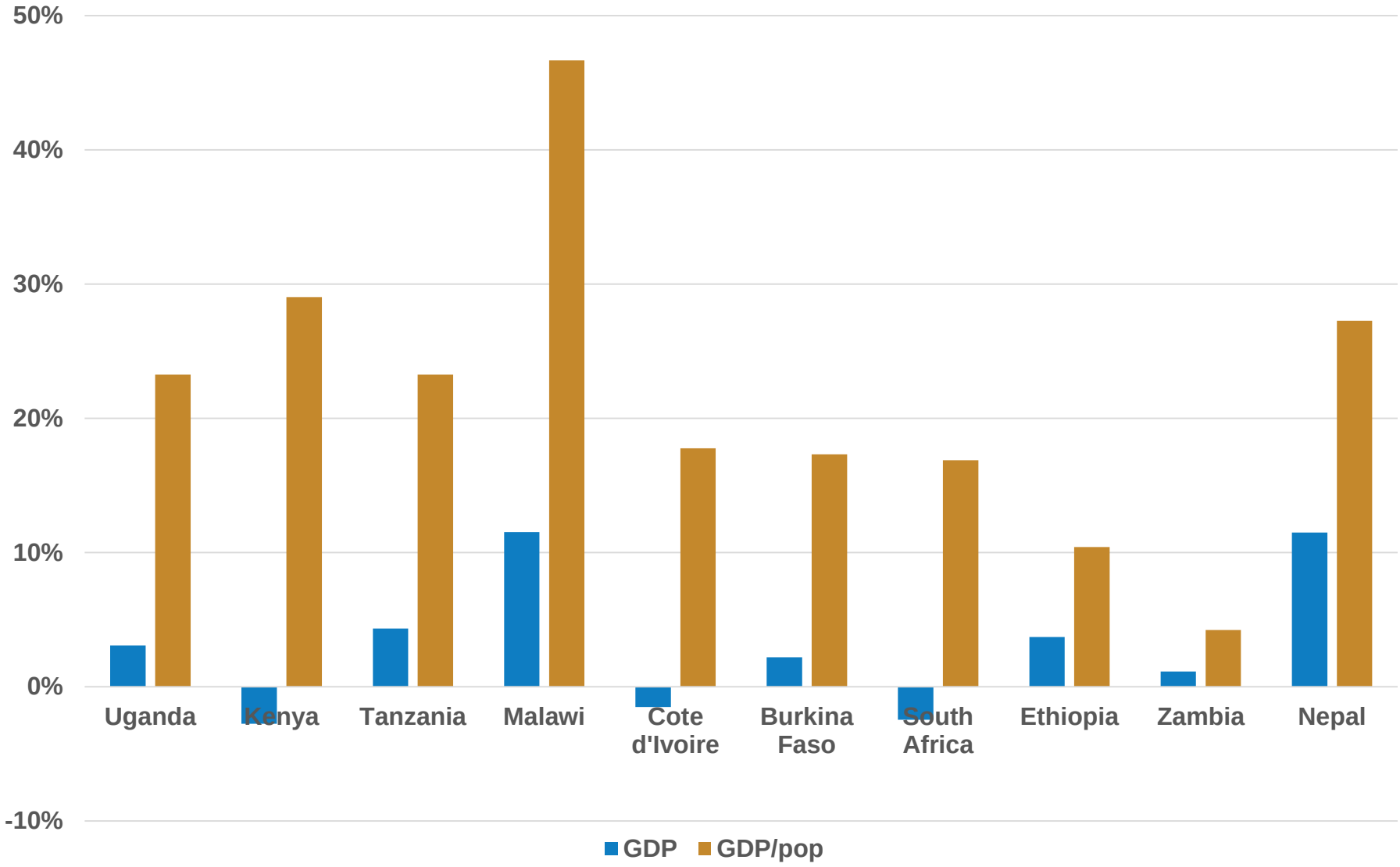
"Family planning is good for the children… for the family welfare, and for the country. The family would spend less on children and their needs. In turn, they would save and make wealth." – President Yoweri Museveni of Uganda, July 28, 2014

What metrics should we use for the demographic dividend?

- Change in GDP per capita
- Change in GDP
- Change in poverty
- Change in investment or capital stock
- Change in employment
- Change in labor force-employment gap


Percentage change in GDP per capita in final year:
Economic only vs. economic + education + family planning
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Uganda
Kenya
Tanzania
Malawi
Cote d'Ivoire
Burkina Faso
South Africa
Ethiopia
Zambia
Nepal

Percentage change in GDP and GDP per capita in final year: Economic only vs. economic + education + family planning

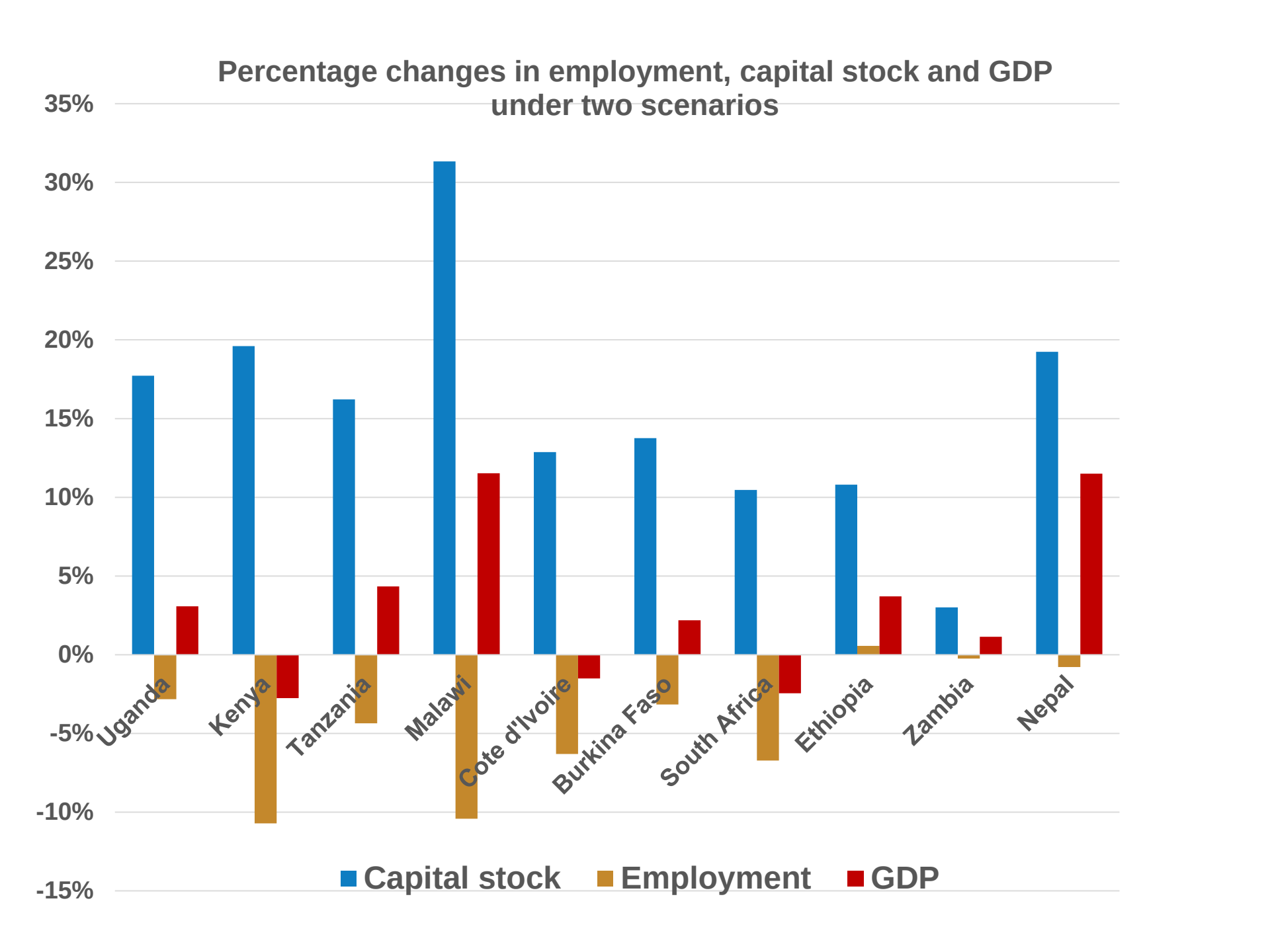


How much GDP changes depends on how much employment changes in relation to how much capital changes

2/3 x [% Change in Employment] +

1/3 x [% Change in Capital] =

% Change in GDP


Percentage changes in employment, capital stock and GDP under two scenarios
35%
30%
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
Uganda
Kenya
Tanzania
Malawi
Cote d'Ivoire
Burkina Faso
South Africa
Ethiopia
Zambia
Nepal
Capital stock
Employment
GDP