UNIVERSITY OF HOHENHEIM

Global and local effects of the COVID-19 pandemic on Africa:

What role does tourism play?

Arndt Feuerbacher and Dorothee Flaig

dorothee.flaig@uni-hohenheim.de

Hohenheim University, Germany

GTAP Conference, 2021

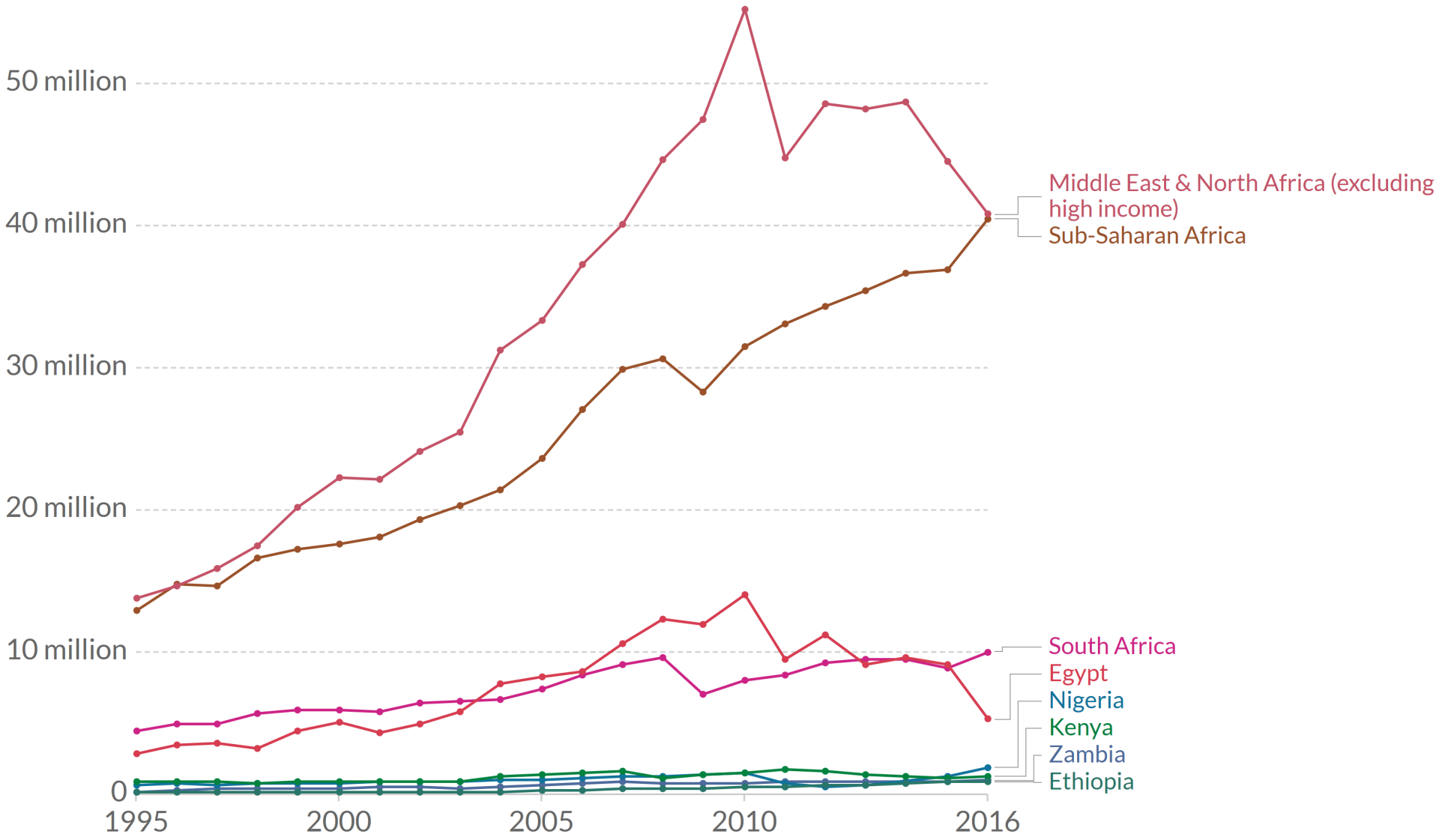
UNIVERSITY OF HOHENHEIM

Outline

1. Tourism in Africa and its vulnerability to crisis
2. Modelling framework
3. Simulation setup
4. Results:
   - Costs of a tourism shut-down on Africa relative to general COVID-19 effect
   - What if COVID-19 only happened outside of Africa?
5. Conclusions

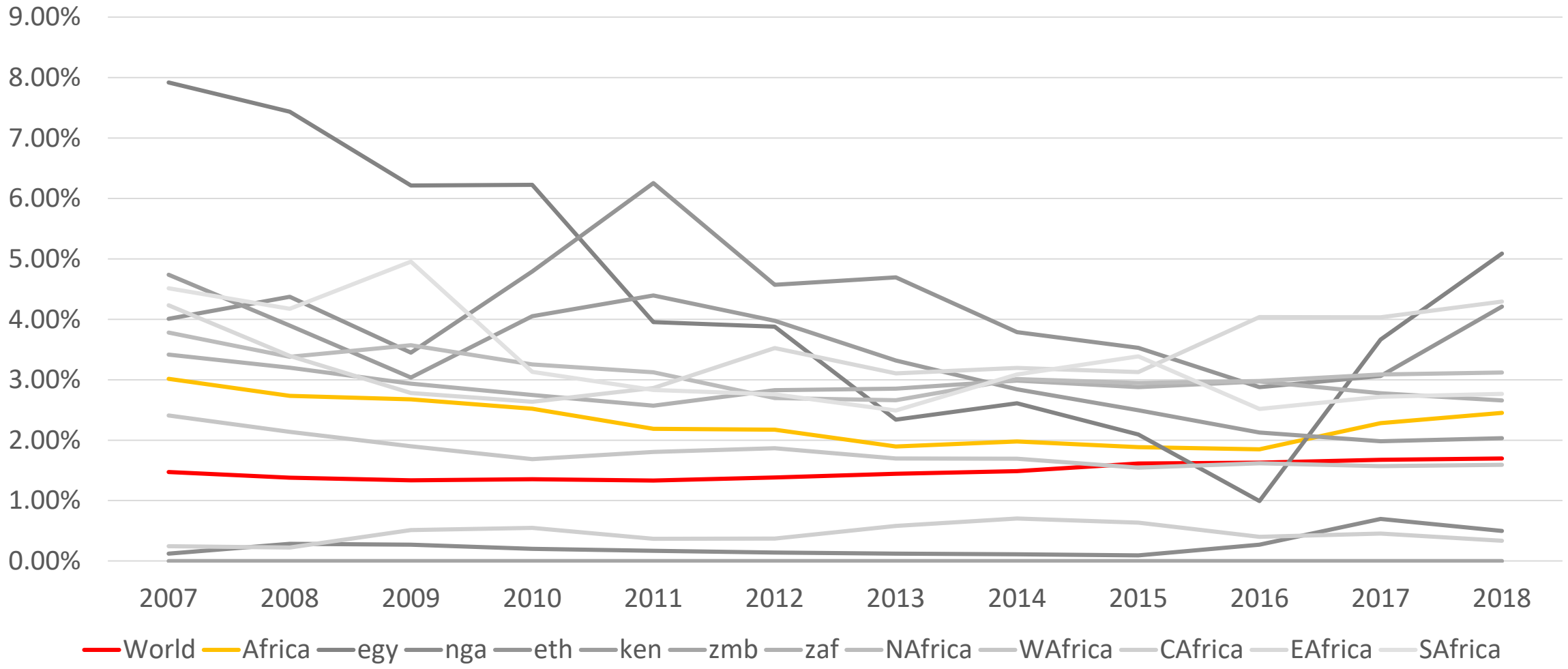
International tourism: Number of arrivals, 1995 to 2016

Overnight visitors who travel to a country whose main purpose in visiting is not commercial.



Source: World Bank

Tourism in Africa: International tourism receipts relative to GDP



Source: own calculation based on World Development Indicators

UNWTO TOURISM DASHBOARD

TOURISM RESULTS | MONTHLY AND YTD CHANGE | VULNERABILITY OF DESTINATIONS | IMPACT ASSESSMENT | Home

Results by region | Results by country

Tourism Results

This page provides an overview of tourism results (**International Tourist Arrivals**) on a global and regional level as well as by country groupings.

To see results by country, switch to **Results by country.**

Show results for the World

Region: Africa

OR

Group: All

Selected region

Africa

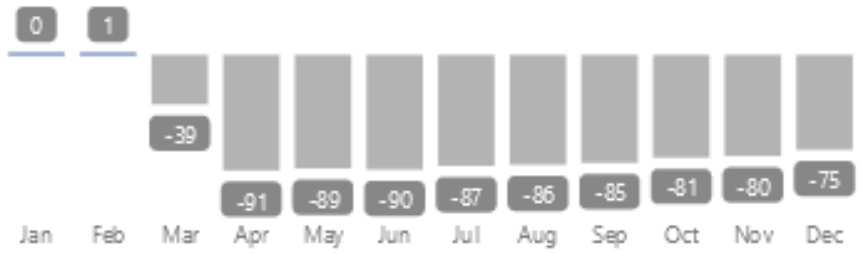
Year: 2020 / 2021

International Tourist Arrivals

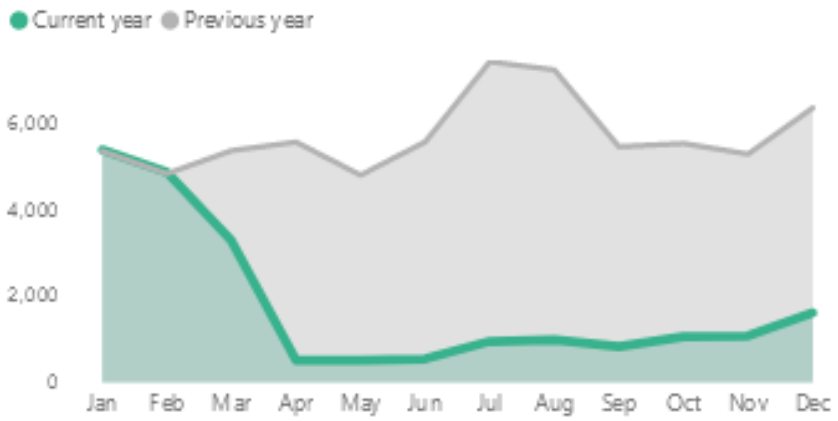
YTD change (%): **-69**

YTD available: **January - December 2020**

Change by month (%)

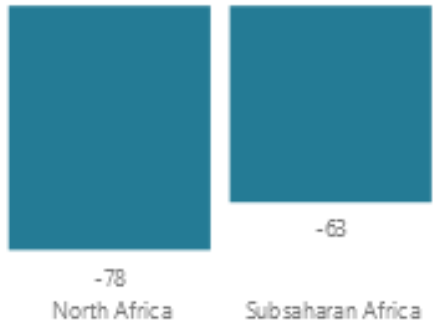


International tourist arrivals (thousands)



YTD change by region (%)

YTD change by subregion (%)



UNIVERSITY OF HOHENHEIM

Tourism and growth

- Growth – importance in world GDP – developing countries/developed countries (as development strategy)
- Tourism as major source of foreign exchange, diversification of economy, employment growth: strategic framework to support tourism (e.g. AU, Ghana, Nigeria, South Africa)
- In literature: ambiguous findings with respect to linkage between tourism and economic growth

  Reason might be volatile nature of tourism (Balli and Louis, 2015)

UNIVERSITY OF HOHENHEIM

Tourism in Africa and its vulnerability to crisis

- domestic and global uncertainty shocks reduce tourism inflows:

  The risk of **destination countries** discourages tourists from visiting those areas (geopolitical risk, natural disasters, crime and the threat of global terrorism, disease outbreaks)

  high uncertainty in the **origin countries** impedes tourist inflows in the destination countries (unemployment, recession – tourism as luxury good)

- "[…] when investigating verbal conflict between a destination country and others, our findings reveal a negative impact on tourist arrivals and an increase in volatility in the destination country. " (Theocharous, 2020) (Eastern Mediterranean)
- "The volatility of tourism income is more than eight times the volatility of the Greek GDP cycle. […] the cyclical component of tourism income is significantly influencing the cyclical component of GDP in Greece." (Eeckels et al. 2012)
- "…an increase in tourism earnings as a proportion of GDP and as the main export share in the total country export impairs the sovereign risk rating" (Šergo and Gržinić, 2018) (set of 22 countries)

UNIVERSITY OF HOHENHEIM

Research Question

- Identify the different transmission channels of the COVID-19 crisis on Africa:

  What is the role of tourism in the current (COVID19) crisis?

  → Scenario 1: The COVID-19 pandemic reaches Africa (global and local effects on Africa)

  How much does the crisis in RoW alone impact the African continent?

  → Scenario 2: The COVID-19 pandemic happens only outside Africa (only global effects on Africa)

UNIVERSITY OF HOHENHEIM

Modelling framework

- Model and data

  global computable general equilibrium (CGE) model, METRO (OECD, 2015), derived from GLOBE (McDonald and Thierfelder, 2013).

  database derives from the GTAP v10 database (Aguiar et al., 2019),augmented with data on use categories compiled at the OECD

- Aggregation

  19 regions, focus on the African continent

  25 sectors of production

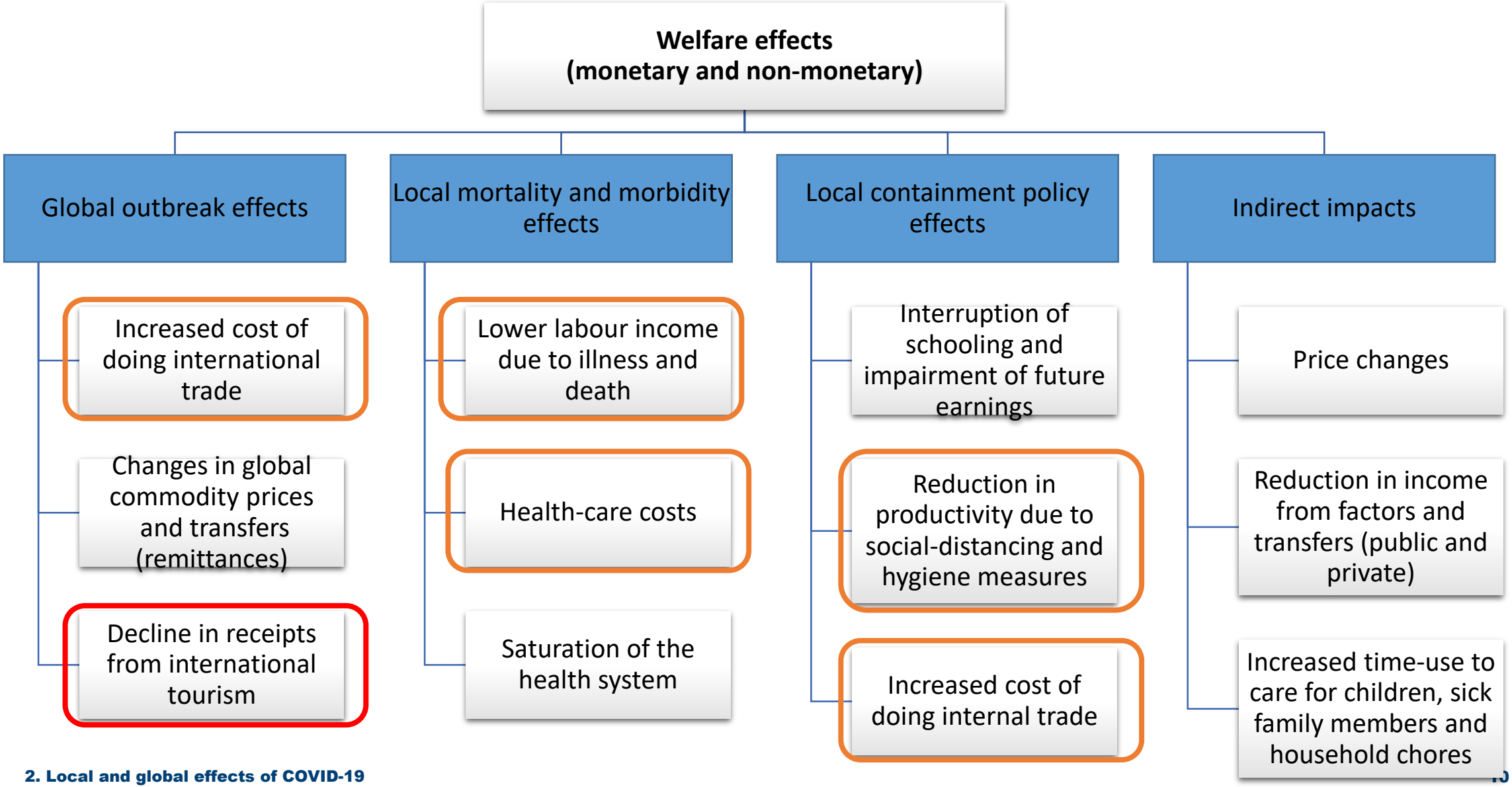
- Short term closure

  Production factors immobile

  Fix government expenditure and flexible income tax, investment volume fix

  flexible exchange rate and fix current account

Simulation setup: Local and global effects of COVID-19



UNIVERSITY OF HOHENHEIM

Simulation setup

Channel	Variable Shocked	Detail
Global effects		
Decline in receipts from international tourism	Tourism sectors, productivity	80% less tourists, international tourism receipts sourced from World Development Indicators International tourism expenditure break down into export of services: ~50% hotels and restaurants; ~35% recreational and other services; ~15% internal transportation
Decrease in air transportation	Air transport, productivity	50% global average decline, net out air transport related to tourism
Increased cost of doing international trade.	Trade margins	25% increase of international trade costs (Maliszewska et al., 2020)

UNIVERSITY OF HOHENHEIM

Simulation setup

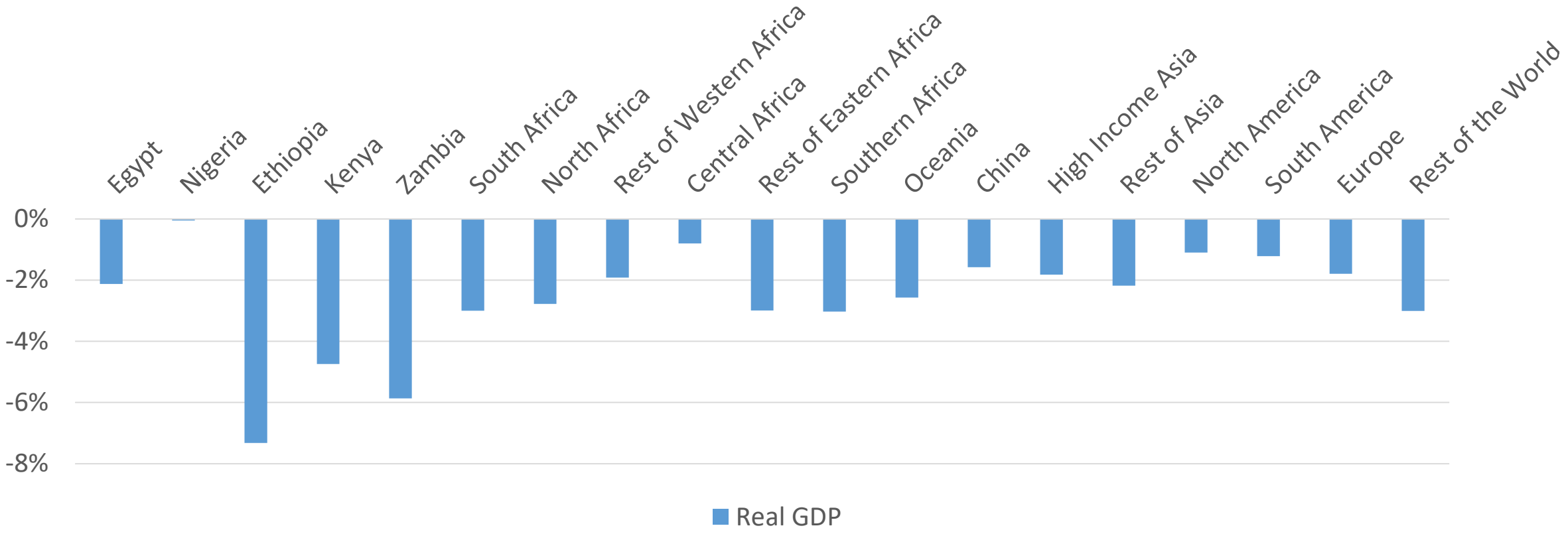
Channel	Variable Shocked	Detail
Local effects		
Lower labour income due to illness and death,	Labour supply	Differentiated by region based on McKibbin and Fernando (2021)
Health-care costs	Government expenditure	----inconclusive, assume no change ----
Reduction in productivity due to containment policy	Sector specific productivity	Used as residual to match GDP IMF effects (Difference between forecasts by IMF: Oct-2019 and Oct-2020); differing weights by sector for essential, non-essential high risk and non-essential low risk sectors

Tourism shock details: 80% less tourist receipts, reduction by sector

	Egypt	Nigeria	Ethiopia	Kenya	Zambia	South Africa	North Africa	Rest of Western Africa	Central Africa	Rest of Eastern Africa	Southern Africa	Oceania	China	High Income Asia	Rest of Asia	North America	South America	Europe	Rest of the World
Accommodation. Food and service activities	28%	1%	70%	63%	41%	37%	28%	38%	26%	35%	51%	12%	30%	13%	25%	8%	10%	15%	23%
Transport nec	3%	0%	6%	6%	9%	7%	5%	2%	1%	5%	4%	2%	1%	2%	1%	1%	2%	2%	4%
Air transport	21%	5%	16%	15%	71%	25%	29%	15%	6%	30%	27%	19%	18%	12%	13%	16%	24%	18%	30%
Recreational and other services	13%	1%	52%	68%	65%	10%	45%	19%	5%	25%	12%	19%	6%	9%	11%	4%	6%	6%	39%

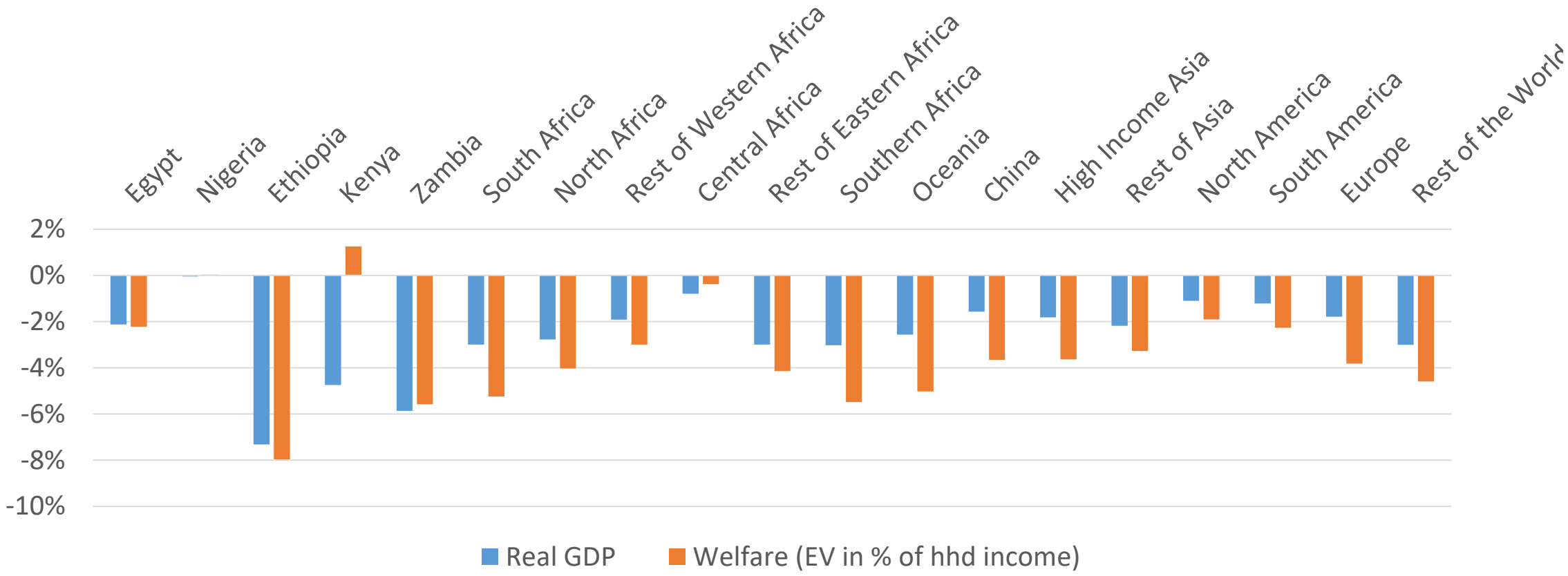
UNIVERSITY OF HOHENHEIM

Scenario 1: Costs of tourism shut-down - GDP effects



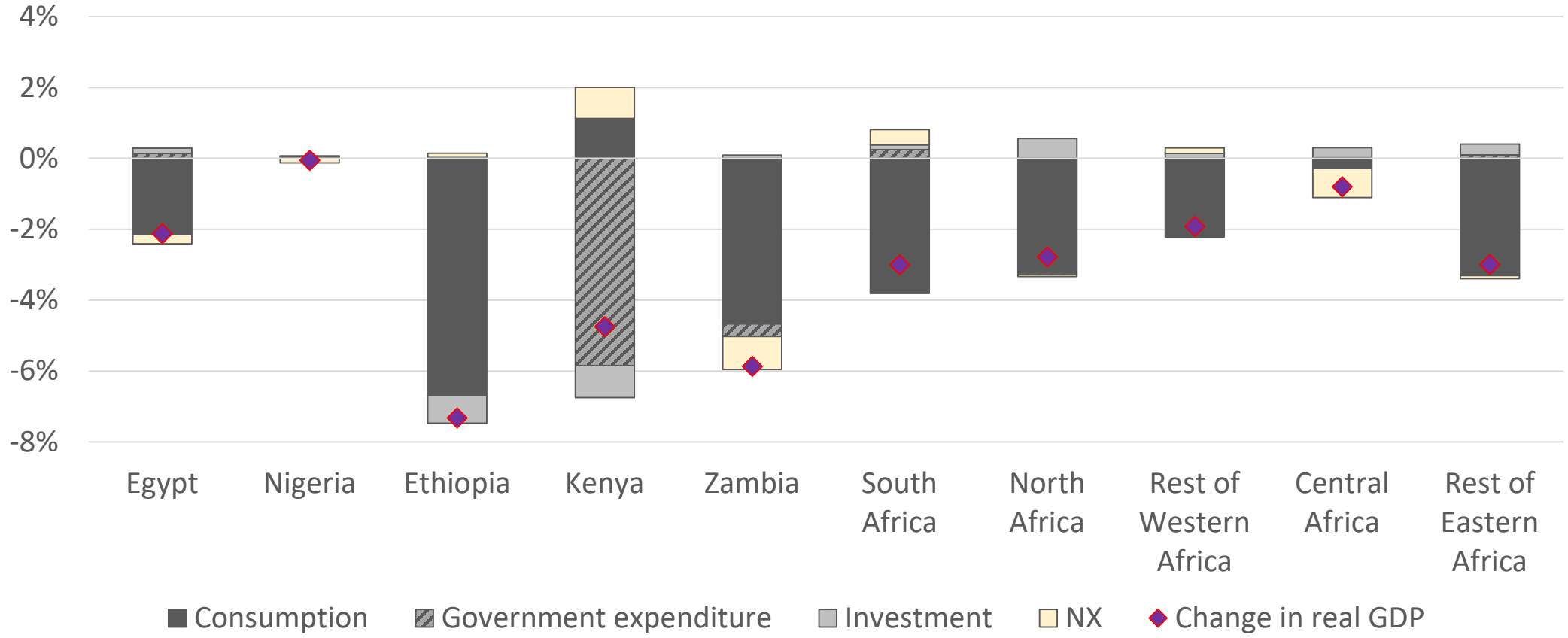
UNIVERSITY OF HOHENHEIM

Scenario 1: Costs of tourism shut-down - Welfare



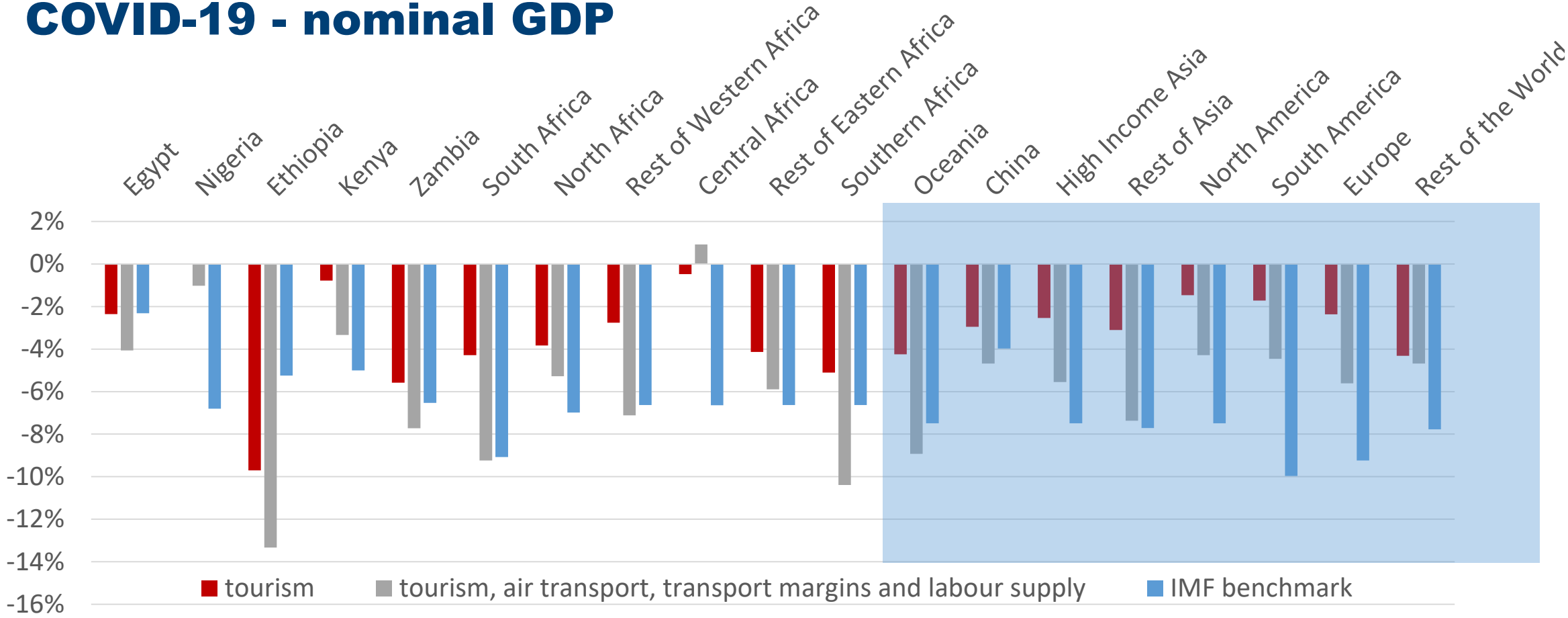
UNIVERSITY OF HOHENHEIM

Scenario 1: Costs of tourism shut-down – Decomposition of real GDP Effects



UNIVERSITY OF HOHENHEIM

Scenario 1: Costs of tourism shut-down relative to general COVID-19 - nominal GDP



Scenario 2: What if COVID-19 only happened outside of Africa?

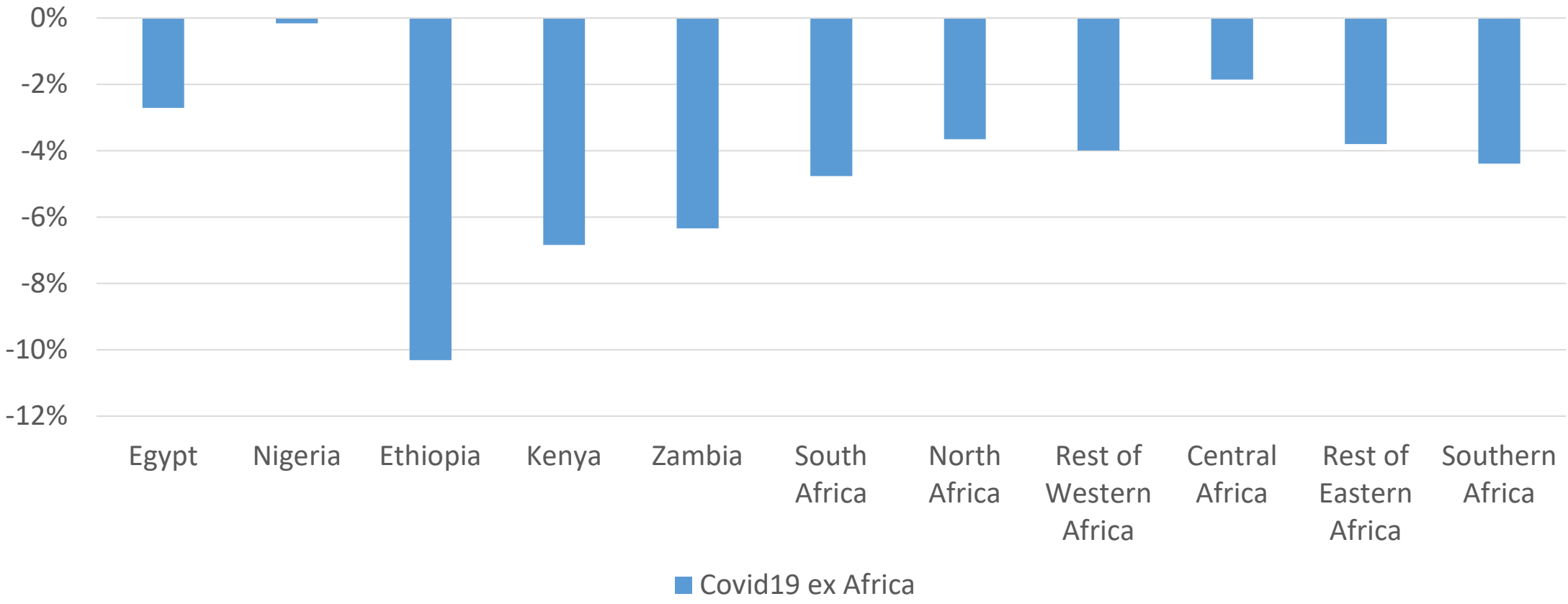
Channel	Variable Shocked	Detail
<u>Global effects</u>		
Decline in receipts from international tourism	Tourism sectors, productivity	80% less tourists, international tourism receipts sourced from World Development Indicators
Decrease in air transportation	Air transport, productivity	50% global average decline, net out air transport related to tourism
Increased cost of doing international trade.	Trade margins	25% increase of international trade costs (Maliszewska et al., 2020)
<u>Local effects</u>		
Lower labour income due to illness and death,	Labour supply	Differentiated by region based on McKibbin and Fernando 2021
Health-care costs	Government expenditure	----inconclusive, assume no change ----
Reduction in productivity due to containment policy	Sector specific productivity	Used as residual to match GDP IMF effects (Difference between forecasts by IMF: Oct-2019 and Oct-2020); differing weights by sector for essential, non-essential high risk and non-essential low risk sectors

What if Covid19 didn't reach Africa?

- **global effects in Africa**
- **global and local effects in ROW**

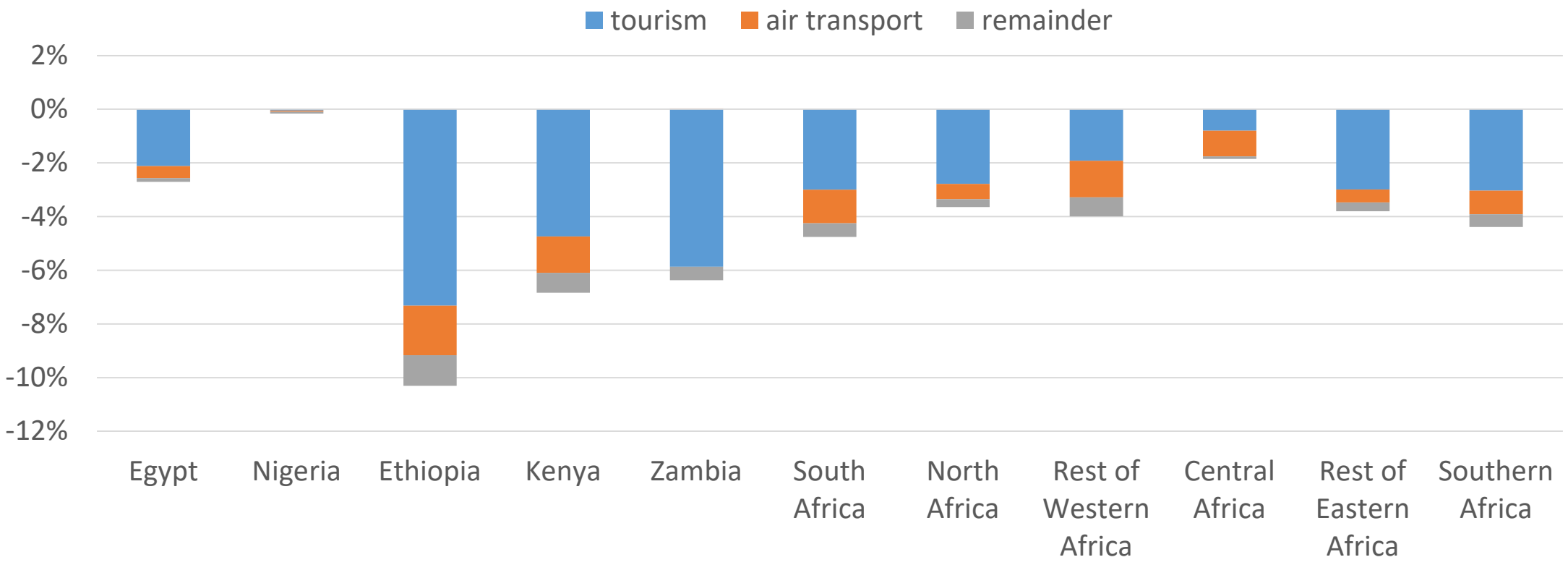
Scenario 2: What if COVID-19 only happened outside of Africa?

Effects on real GDP



Scenario 2: What if COVID-19 only happened outside of Africa?

Effects on GDP



Contribution of tourism to total ex-Africa shock										
78%	31%	71%	69%	93%	63%	76%	48%	43%	79%	69%

UNIVERSITY OF HOHENHEIM

Conclusions

- Tourism accounts for 2.5% of GDP in Africa, share is growing
  - Identified as strategic sector in developing strategies
  - Danger of volatility
- Tourism makes up a large share in the possible impacts of a global pandemic
- Effects of pandemic on Africa are huge, even assuming illness did not spread inside Africa
  - → Mobility restrictions are the major channel for these negative effects (i.e., loss of tourism, less air transport)

UNIVERSITY OF HOHENHEIM

Thank you for your attention

Questions?

Contact: dorothee.flaig@uni-hohenheim.de

UNIVERSITY OF HOHENHEIM

References

- Aguiar, A., Chepeliev, M., Corong, E., McDougall, R., & van der Mensbrugghe, D. (2019). The GTAP Data Base: Version 10. Journal of Global Economic Analysis, 4(1), 1-27. Retrieved from https://www.jgea.org/ojs/index.php/jgea/article/view/77
- Balli, F. Louis, R.J. (2015). Modelling the tourism receipt's volatility, Applied Economics Letters, 22:2, 110-115, DOI: 10.1080/13504851.2014.929616
- Eeckels, B., Filis, G., Leon, C. (2012). Tourism income and economic growth in Greece: Empirical evidence from their cyclical components (2012) *Tourism Economics*, 18 (4), pp. 817-834.
- IMF (2020). Economic Outlook October: https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD/AFQ
- IMF (2019). World economic outlook.

UNIVERSITY OF HOHENHEIM

References

- Maliszewska, M., Mattoo, A. and van der Mensbrugghe, D. (2020). The Potential Impact of COVID-19 on GDP and Trade: A Preliminary Assessment. Policy Research Working Paper, 9211. World Bank.
- McDonald, S. & Thierfelder, K.E. (2013). Globe v1: A SAM Based Global CGE Model using GTAP Data, Model documentation. Available at: http://www.cgemod.org.uk/
- OECD (2015). METRO v1 Model Documentation. TAD/TC/WP(2014)24/FINAL
- Warwick McKibbin, Roshen Fernando (2021). The Global Macroeconomic Impacts of COVID-19: Seven Scenarios. *Asian Economic Papers*; 20 (2): 1–30. doi: https://doi.org/10.1162 /asep_a_00796
- Šergo, Z., Grainić, J. (2018). Does the International Tourism Industry Relax Sovereign Credit Ratings: The Case of Countries Most Reliant on Tourism (2018). *South East European Journal of Economics and Business*, 13 (2), pp. 100-111.
- Theocharous, A.L., Zopiatis, A., Lambertides, N., Savva, C.S., Mansfeld, Y. (2020). Tourism, Instability and Regional Interdependency: Evidence from the Eastern-Mediterranean (2020) *Defence and Peace Economics*, 31 (3), pp. 245-268.