

HUMAN DEVELOPMENT AND ECONOMIC VULNERABILITY— EXPLORING ANOTHER DIMENSION OF DEVELOPMENT



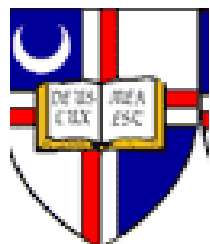
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Concept

Human Development conveys:

development is much more than income growth; move focus away from a “**growth-centric**” thinking to other dimensions of development such as health and education.

The HDI aggregates **three basic dimensions** into a composite index.

Critique

- Dasgupta and Weale (1992), HDI would include political and civil liberties.
- Sagar and Najam (1998), HDI “ignores the environmental dimensions of development.”
- Nussbaum (2000) , HDI would include personal, social and political freedoms in basic capabilities.
- Alkire and Foster (2011) advocate multidimensional poverty measures based on a ‘dual cutoff’ identification approach.

Response

2010 Human Development Report (HDR) introduced some changes to the indicators measuring the knowledge and decent standard of living dimensions, as well as the method for calculating the HDI.

Key contention: the measurement of human development should be expanded to go beyond the core dimensions.

The Measurement of Human Development is an Ongoing Challenge

“In the most notable innovations in this 20th anniversary year, we introduce three multidimensional measures of inequality and poverty to the HDR family of measures.”

HDR(2010)

- **The inequality adjusted HDI (IHDI).**
- The Gender Inequality Index (GDI).
- The Multidimensional Poverty Index (MPI).

Exploring a New Dimension of HDI

- **Vulnerability** is the probability or risk **today** of being in poverty or to fall into deeper poverty in the future.

These uncertainties arise from a wide range of risk factors: natural disasters, systemic political and market failures, external economic shocks, adverse technological and market changes.

The 2010 HDR raises the issue of economic vulnerabilities, noting that, “**Countries and people are vulnerable when their human development is threatened by various risks.**”

Proposition

Economic vulnerabilities need to be explicitly considered as another dimension (negative) of the human capabilities; propose an

Uncertainty-Adjusted HDI.

- We present case study for Pakistan showing how the adjusted HDI reflects uncertainties arising out of the country's political and economic environment over time.

Methodology

“The probability of falling into poverty tomorrow is impossible to measure, but one can analyze income and consumption dynamics and variability as proxies for vulnerability.” *Coudouel et al. (2002)*

We follow an approach similar used to compute *Inequality-Adjusted HDI* (2010) based on Atkinson measure of inequality (1970).

Inequality-adjusted HDI

- Atkinson develops the following specific measure of inequality:

$$I = 1 - \left[\sum_i \left(\frac{y_i}{\mu} \right)^{1-\epsilon} f(y_i) \right]^{1/(1-\epsilon)}$$

- The HDR's **Inequality-adjusted HDI** sets the aversion parameter ϵ equal to one.
- In this case, the inequality measure is:

$$A = 1 - \gamma / \mu$$

where γ is the geometric mean and μ is the arithmetic mean of the distribution.

An Exploratory Exercise

- Limit this analysis to the HDI for the year 2011, and to the income component of the HDI.
- Data was obtained from WDI database on the following economic variables for all available countries:
 - 1.GDP growth (annual %)
 - 2.GDP per capita growth (annual %)
 - 3.GNI growth (annual %)
 - 4.GNI per capita growth (annual %)
 - 5.Household final consumption expenditure (annual % growth)
 - 6.Household final consumption expenditure per capita (annual % growth)
 - 7.Household final consumption expenditure, etc. (annual % growth)

Summary Results from Adjustments to HDI

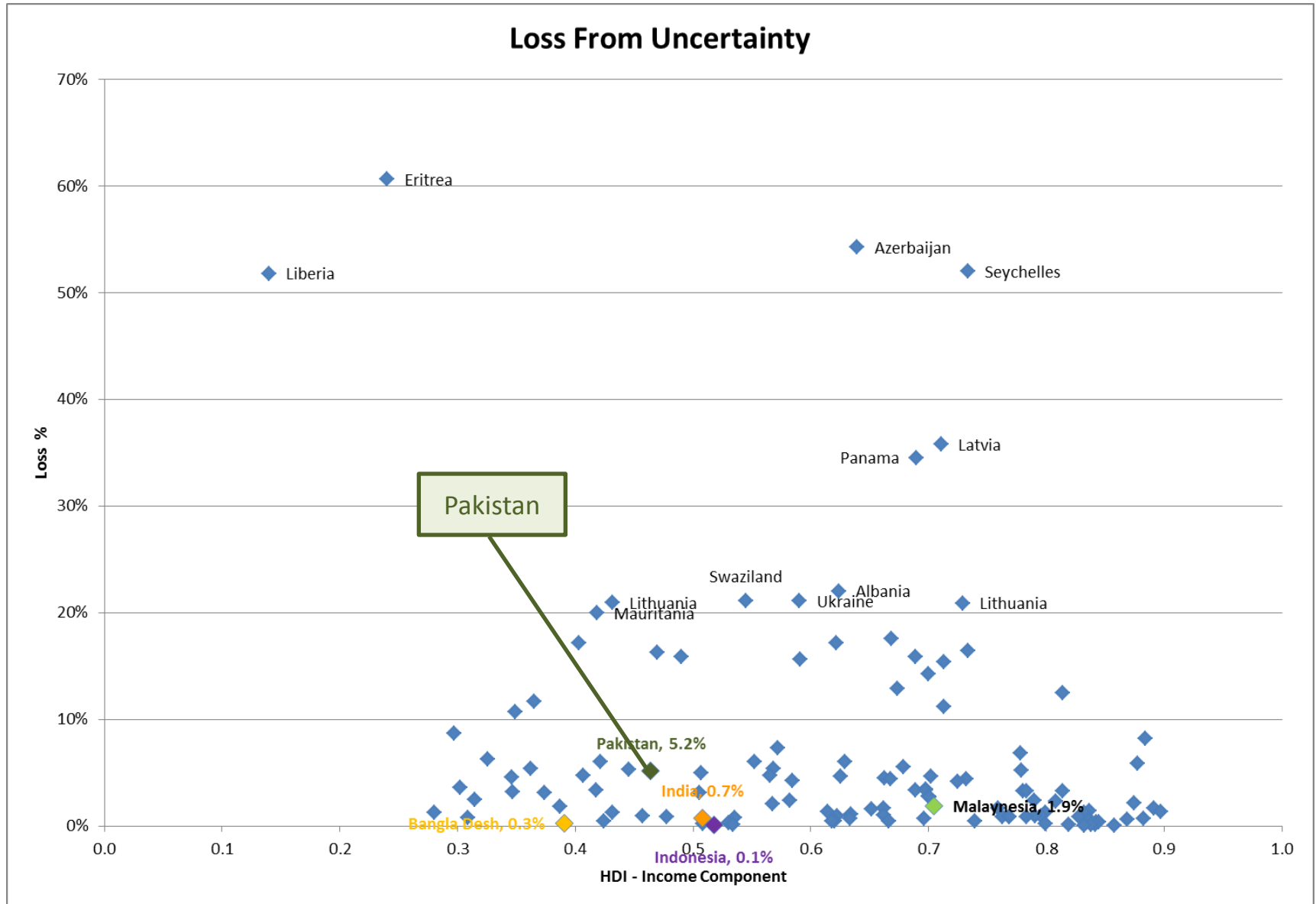
| A: Loss or Gain in Country Rankings | | | | | | | |
|--|------------|------------|------------|------------|------------|------------|------------|
| Rank Change | A1 | A2 | A3 | A4 | A5 | A6 | A7 |
| below -20 | 10 | 9 | 7 | 7 | 7 | 7 | 9 |
| -20 to -15 | 2 | 4 | 4 | 4 | 3 | 3 | 3 |
| -15 to -10 | 4 | 3 | 4 | 3 | 7 | 5 | 5 |
| -10 to -5 | 8 | 11 | 6 | 6 | 6 | 8 | 8 |
| -5 to 0 | 34 | 26 | 27 | 28 | 18 | 19 | 19 |
| 0 to 5 | 96 | 101 | 81 | 81 | 46 | 45 | 44 |
| 5 to 10 | 11 | 18 | 10 | 11 | 18 | 17 | 27 |
| 10 to 15 | 4 | 5 | 2 | 1 | 11 | 11 | 14 |
| 15 to 20 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| above 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 169 | 177 | 141 | 141 | 117 | 116 | 129 |
| No Change | 17 | 9 | 10 | 10 | 7 | 8 | 9 |
| Total | 186 | 186 | 151 | 151 | 124 | 124 | 138 |

Summary Results from Adjustments to HDI

B: Percent Loss in HDI Due to Uncertainty Adjustment

| Loss Range | A1 | A2 | A3 | A4 | A5 | A6 | A7 |
|----------------|-------|-------|-------|-------|-------|-------|-------|
| 0% to 5% | 155 | 154 | 119 | 119 | 80 | 81 | 88 |
| 5% to 10% | 13 | 14 | 12 | 12 | 17 | 16 | 18 |
| 10% to 15% | 7 | 8 | 7 | 7 | 6 | 6 | 12 |
| 15% to 20% | 4 | 3 | 5 | 6 | 9 | 10 | 5 |
| Above 20% | 7 | 7 | 8 | 7 | 12 | 11 | 15 |
| Total | 186 | 186 | 151 | 151 | 124 | 124 | 138 |
| Minimum | 0.1% | 0.1% | 0.1% | 0.0% | 0.1% | 0.1% | 0.1% |
| Maximum | 91.0% | 86.2% | 53.7% | 52.3% | 64.2% | 60.6% | 58.7% |
| Average | 4.1% | 4.0% | 4.7% | 4.6% | 7.2% | 7.1% | 7.5% |

% Loss in HDI from Adjusting for Uncertainty



Pakistan – Comparison with Selected Countries

| Country | HDI-Rank | HDI -Income Component | Uncertainty Adjusted HDI | Rank-HDI Inc. Comp | Rank-Adj. HDI | Rank Change | % Loss From Adjustment |
|------------|----------|-----------------------|--------------------------|--------------------|---------------|-------------|------------------------|
| Pakistan | 145 | 0.464 | 0.440 | 98 | 94 | 4 | 5.2% |
| Turkey | 92 | 0.689 | 0.665 | 56 | 47 | 9 | 3.4% |
| Malaysia | 61 | 0.704 | 0.691 | 46 | 40 | 6 | 1.9% |
| India | 134 | 0.508 | 0.504 | 92 | 84 | 8 | 0.7% |
| Bangladesh | 146 | 0.391 | 0.390 | 109 | 103 | 6 | 0.3% |
| Indonesia | 124 | 0.518 | 0.517 | 90 | 81 | 9 | 0.1% |

**Table 2: Correlation of HDI (income component)
with % Loss and Rank Changes**

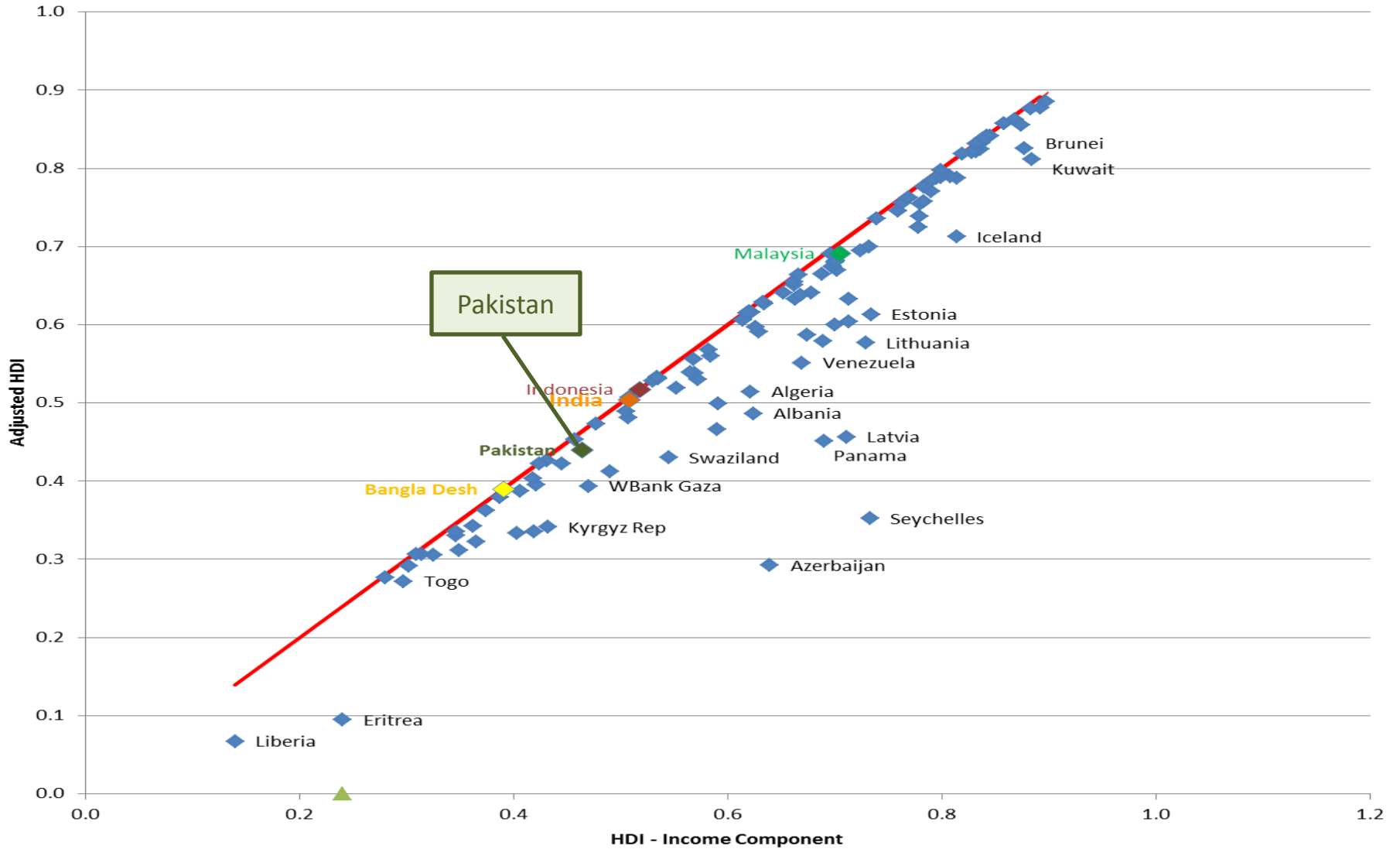
| ADJUSTMENT VARIABLE | % Loss | Rank Change |
|---------------------------------------|---------------|--------------------|
| GDP growth | -0.1407 | -0.0914 |
| GDP per capita growth | -0.1238 | -0.0909 |
| GNI growth | -0.1425 | -0.1031 |
| GNI per capita growth | -0.1356 | -0.1010 |
| Household consumption expenditure | -0.2529 | -0.1737 |
| Household final cons. exp. per capita | -0.2395 | -0.1736 |
| Household final cons. Exp. etc. | -0.2198 | -0.1800 |

Table 3: Countries with > 20% Loss from Adjustment

| Country | HDI (Income) | Adj. HDI (Income) | Rank Change | Loss From Uncertainty |
|------------------------|-------------------------|------------------------------|------------------------|----------------------------------|
| Eritrea | 0.240 | 0.0946 | 0 | 60.6% |
| Azerbaijan | 0.639 | 0.2924 | -53 | 54.2% |
| Seychelles | 0.733 | 0.3520 | -68 | 52.0% |
| Liberia | 0.140 | 0.0673 | 0 | 51.8% |
| Latvia | 0.711 | 0.4562 | -46 | 35.8% |
| Panama | 0.690 | 0.4515 | -39 | 34.5% |
| Albania | 0.624 | 0.4865 | -16 | 22.0% |
| Ukraine | 0.591 | 0.4658 | -12 | 21.1% |
| Swaziland | 0.545 | 0.4299 | -9 | 21.1% |
| Kyrgyz Republic | 0.432 | 0.3413 | -8 | 20.9% |
| Lithuania | 0.729 | 0.5767 | -28 | 20.9% |
| Mauritania | 0.419 | 0.3349 | -6 | 20.0% |
| Pakistan | 0.464 | 0.4398 | 4 | 5.2% |

Plot of HDI and Adjusted HDI

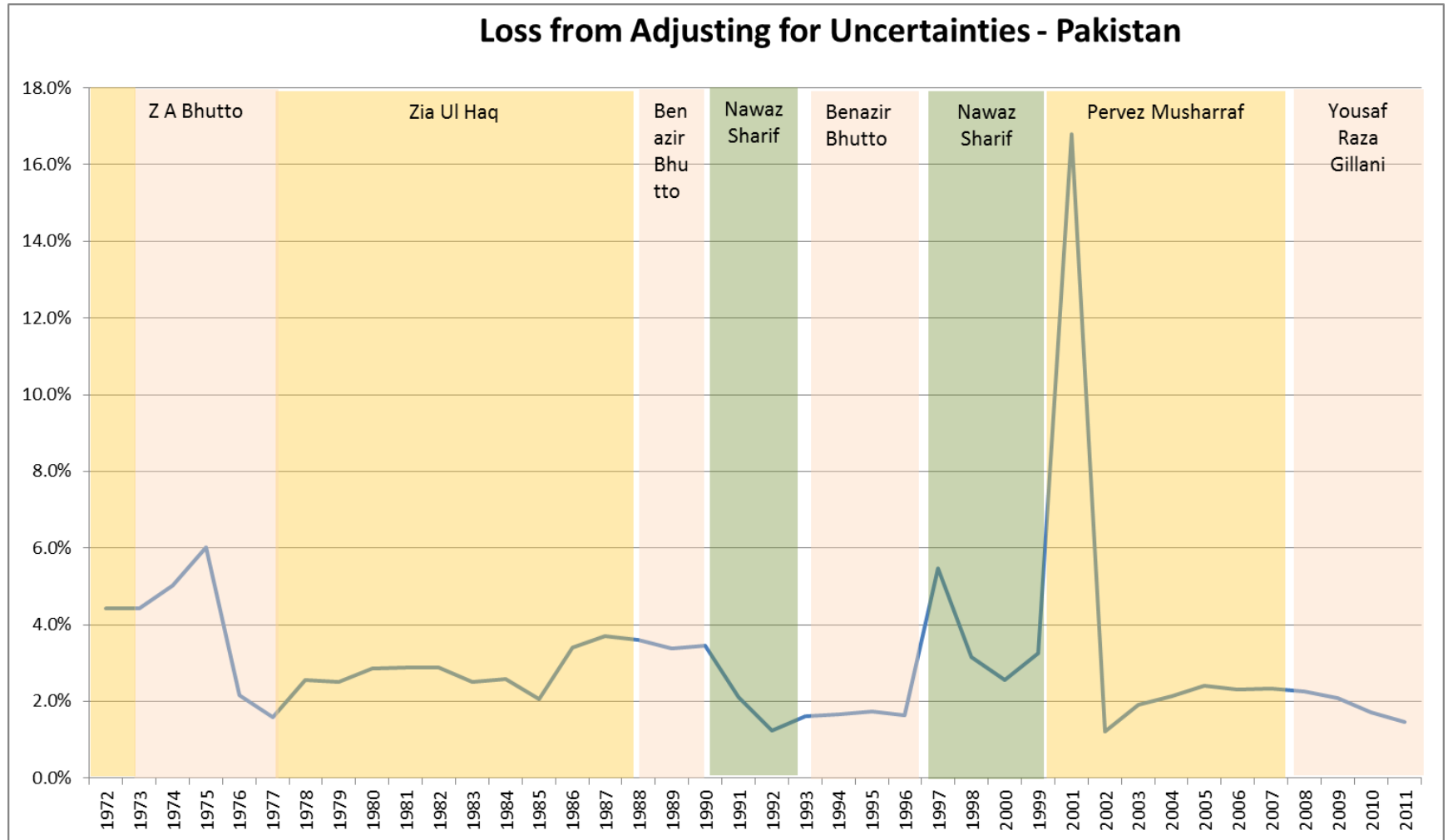
Uncertainty Adjusted HDI



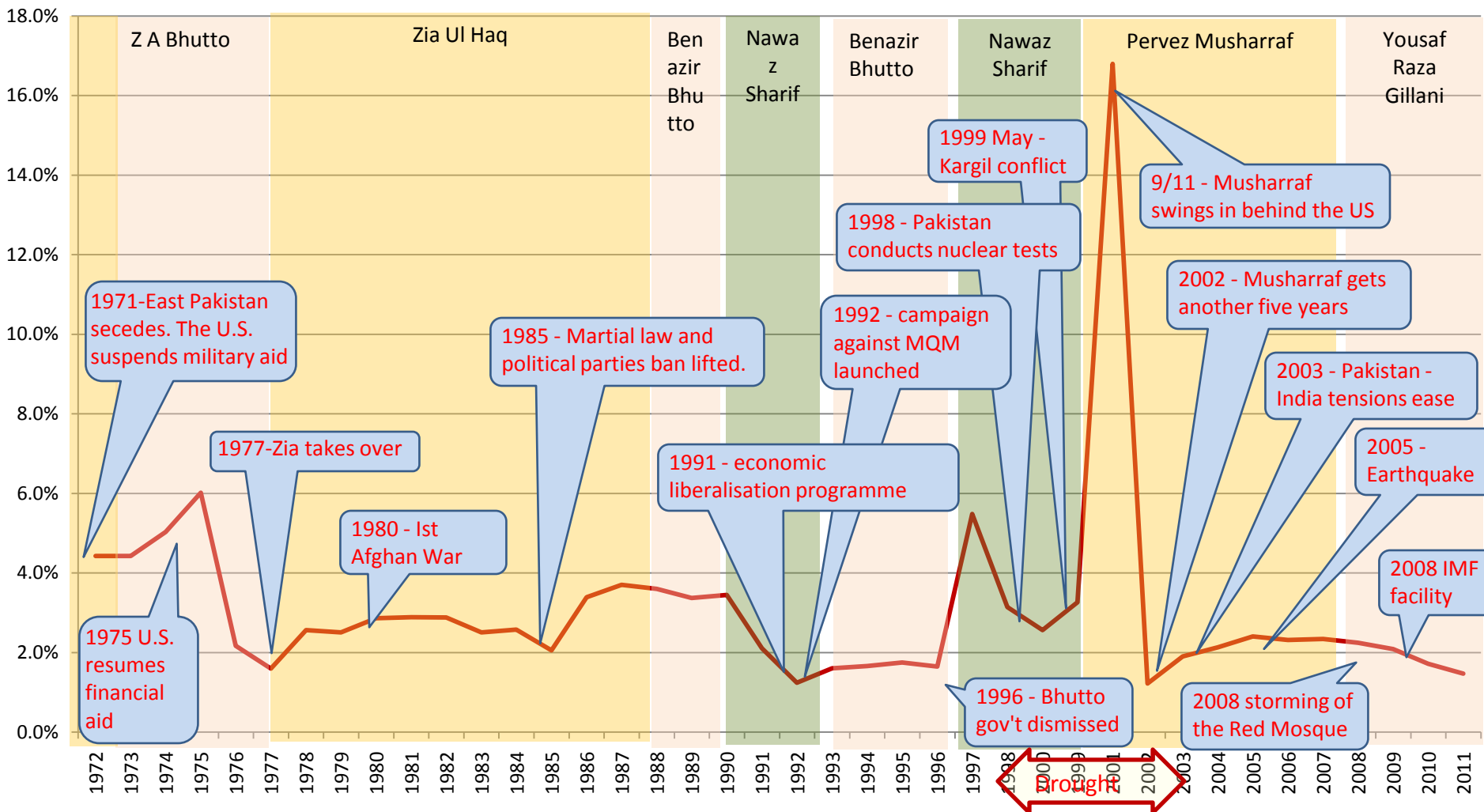
Uncertainty Adjustment over Time - Case of Pakistan

- We trace the percent loss from the uncertainty adjustment over 1972-2011 for Pakistan, using **the GNI per capita growth (annual %) series**.
- The resulting loss indicator series is depicted in Figure 3, each point plotted against the **ending year** of the five year rolling moving window, thus **reflecting the experience of the previous five years**.
- The graph also shows the various political regimes that have been in power over the period 1972-2011 to bring into relieve **the country's political and economic climate from time to time**.

Figure 3: Loss from Adjusting for Uncertainty Over Time



Loss from Adjusting for Uncertainties - Pakistan



Conclusions

- Our preliminary analysis indicates that such an index indeed seems to contain additional information beyond the income index.
- The percentage loss in HDI (income component) seems to reflect well the variability in the economic indicators arising from the political and economic tribulations experienced by each country.
- A time series analysis of the percent loss from the uncertainty adjustment is conducted for Pakistan. It appears to closely trace the political and economic uncertainties over the forty year period.
- The cross sectional and the time series behavior of the adjustment loss indicator appears to validate its conceptual foundation.

Limitations

- Use of annual data limits the usefulness of the measure as a proxy for the underlying economic vulnerabilities.
- History is seldom a perfect predictor of the future .
- Use of aggregate national level economic indicators.

Key Message

The uncertainty adjusted HDI should bring the issue of reducing systemic vulnerabilities faced by the populations into focus, and even elevate it as a goal of developmental strategy.

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