



Training Workshop on Economic Analysis

Trajectories of Development Finance in Laos: Does lower middle income status matter?

Presented by Sithanonxay Suvannaphakdy

May, 2018

Outline

Session 1: Impact of LMIC on development finance

1.1 Conceptual framework

1.2 Data sources and terminology

1.3 Preliminary findings on the changing landscape of development finance in Laos

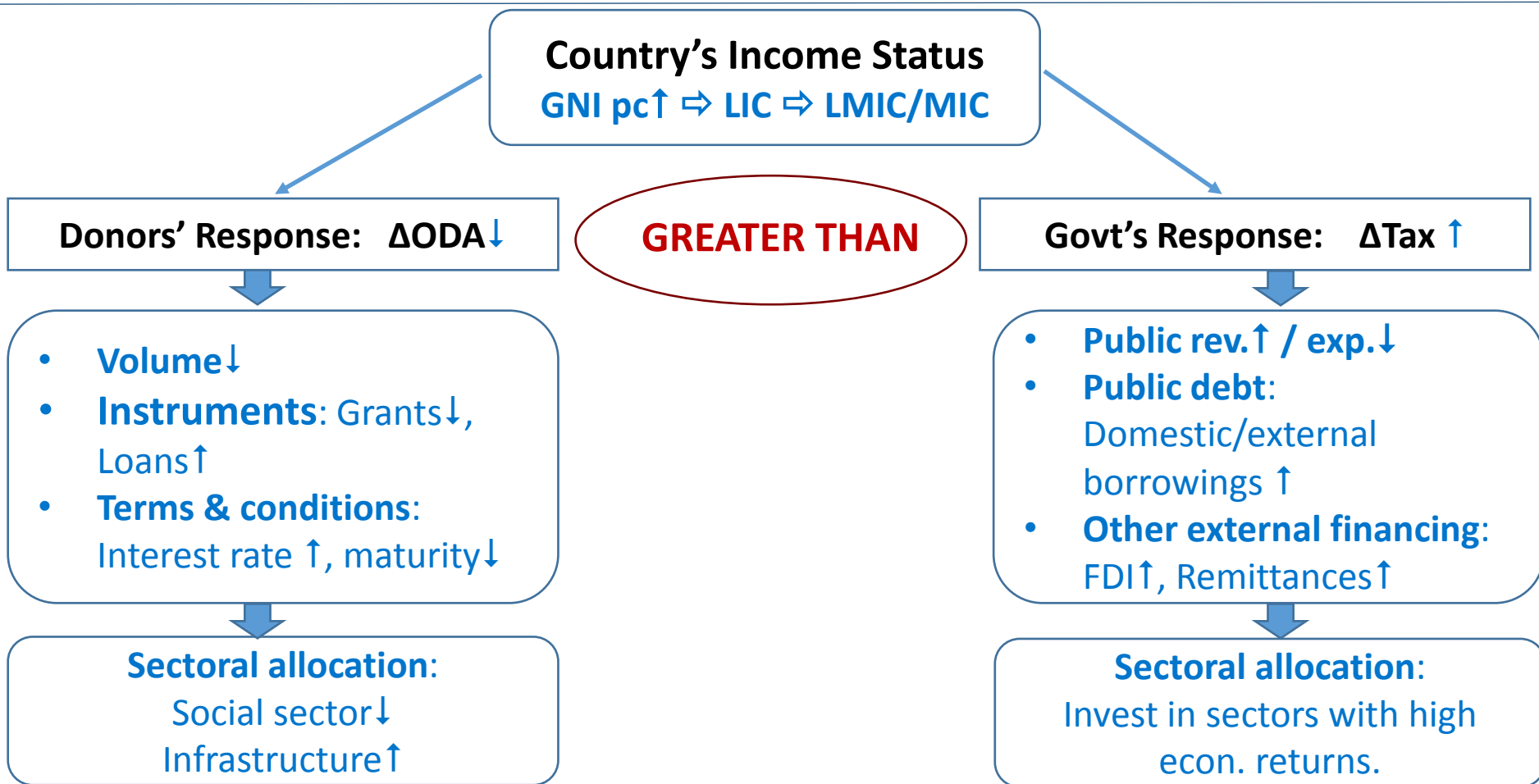
Session 2: Descriptive analysis of development finance

2.1 Techniques for descriptive analysis

2.2 Group exercises

Conceptual Framework

Impact of LMIC on Development Finance



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Data Sources of Development Finance

Data source	Countries	Key variables	Timeframe	Website
OECD database	Official finance of DAC and countries reporting to DAC (excl. China and India)	<ul style="list-style-type: none"> Type of flows: ODA grants, ODA loans, OOFs. Channels: NGOs, public sector Sector: Education, health, infrastructure 	1995-2016	https://stats.oecd.org/
AidData	Chinese official finance	<ul style="list-style-type: none"> Type of flows: ODA grants, ODA loans, OOFs. Channels: NGOs, public sector Sector: Education, health, infrastructure 	2000-2014	http://aiddata.org/data/chinese-global-official-finance-dataset
International debt statistics	All countries	<ul style="list-style-type: none"> External debt flows and stock External official and private debt Interest rate and maturity FDI 	2008-2016	http://datatopics.worldbank.org/debt/ids/country/LAO

Terminology of Development Finance

Term	Definition	Component
Official Development Finance	GRANTS or LOANS for developmental purpose to low income countries undertaken by the official sector at concessional terms (with a grant element of at least 25%) or less concessional terms .	Official development assistance + Other official flows
Official development assistance (ODA)	GRANTS or LOANS with a GRANT ELEMENT of at least 25% for developmental purpose undertaken by the official sector .	Equity + ODA grants + ODA loans
Other official flows (OOFs)	GRANTS or LOANS with GRANT ELEMENT of less than 25% or with less developmental purpose undertaken by the official sector .	OOFs

Source: Author's summary from OECD's (2012) development terms, available at

<http://www.oecd.org/dataoecd/43/12/4312011ec052.pdf?expires=1519460755&id=id&accname=guest&checksum=1930527925CB1C4A48D570F78D77B191>

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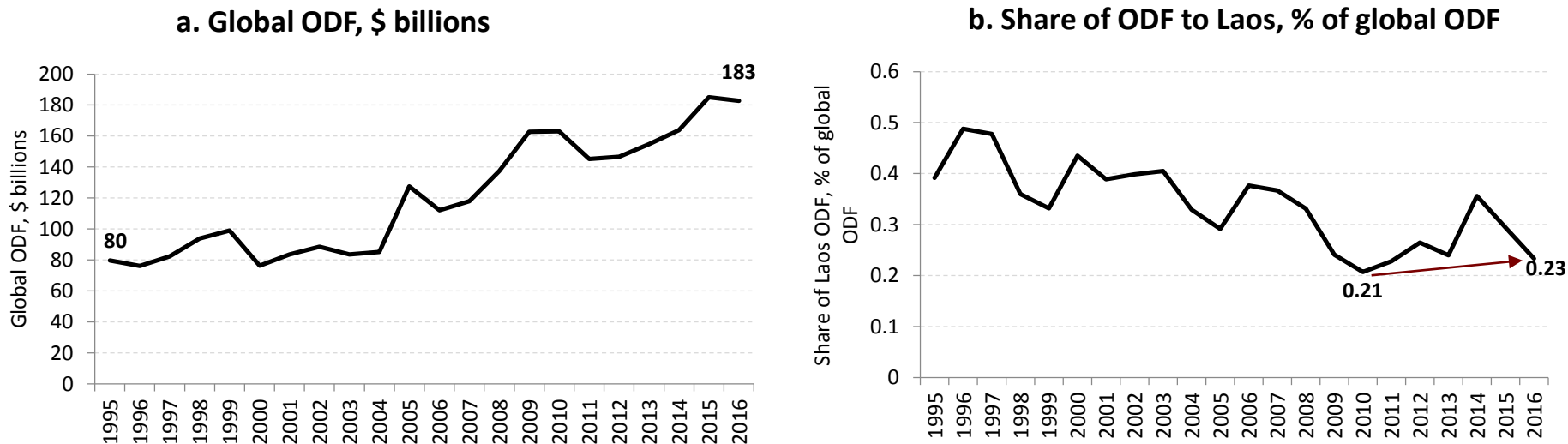
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Development Finance Landscape: Comparative Analysis of Global Trend

- **Trend of global ODF: increased in absolute terms with greater allocation of financial resources to Laos.**
 - Global ODF rose from \$80 billions in 1995 to \$183 billions in 2016 (Fig.1a).
 - Laos has received more share of global ODF in 2010-16 than that in 1995-2009 (Fig.1b).

**Fig.1 DAC's global ODF and its allocation to Laos, commitment amount
(constant prices, \$ billion), 1995-2016**

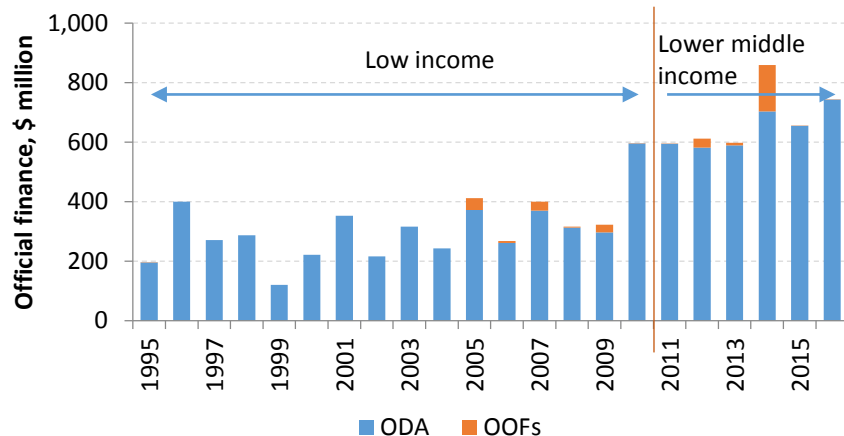


Development Finance Landscape: Volume

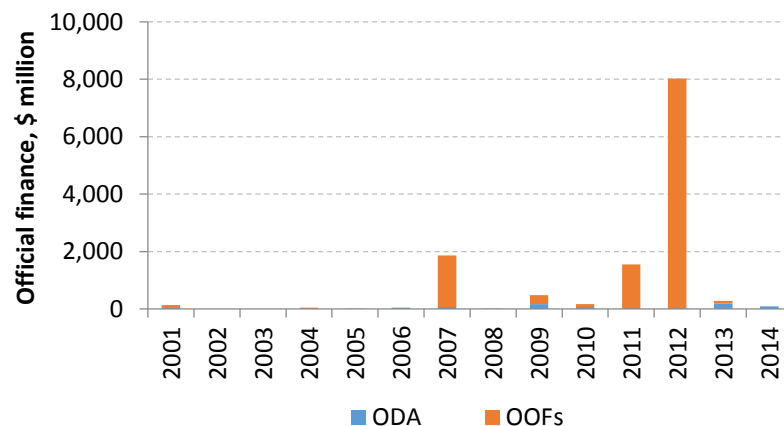
- **ODF inflows to Laos: increased in absolute term but decreased in relative importance to total external financing and GDP.**
 - ODA volumes increased in absolute terms since 2010 (Fig.2a).
 - DAC's ODA has been complemented with an increase in Chinese OOFs (Fig.2b).

**Fig.2 Official finance to Laos, commitment amount
(current prices, \$ million), 1995-2016**

a. DAC's official finance



b. Chinese official finance

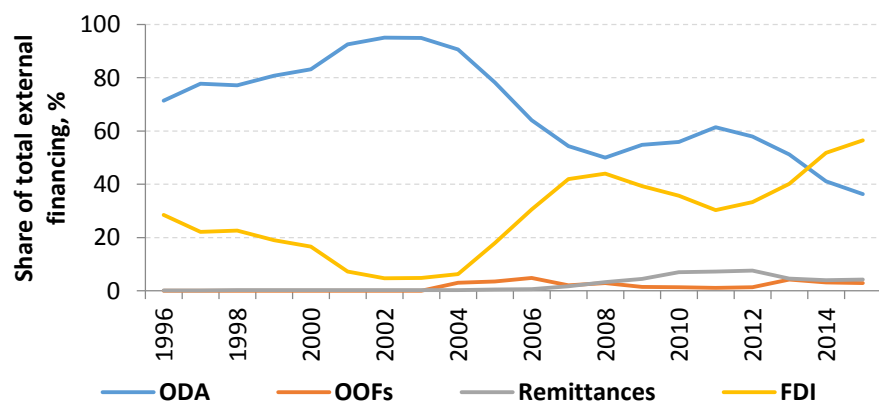


Development Finance Landscape: Official vs. Private Finance

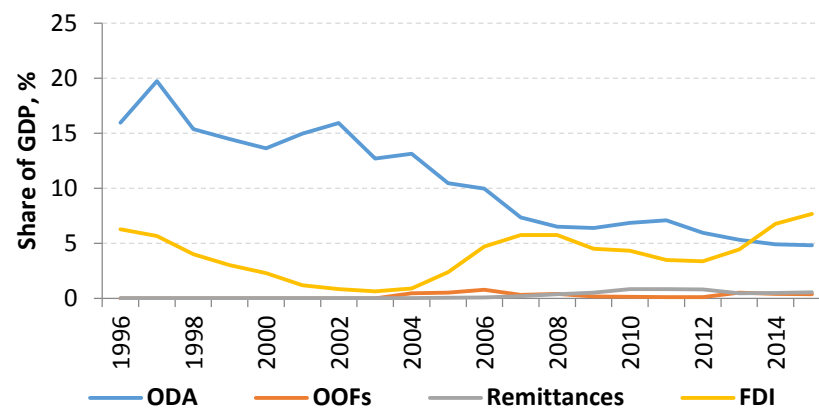
- Share of ODA in total external financing and GDP: **declined since 2002.**
- Source of external financing: **FDI since 2004.**
 - Share of ODA in total external financing rose from 71% in 1996 to 95% in 2002, but then fell to 50% in 2008 and hit the bottom at 36% in 2015 (Fig.3a).
 - Share of ODA in GDP dropped from 19.7% in 1997 to 5.8% in 2008 and 4.8% in 2015 (Fig.3b).

Fig.3 Share of ODA, OOFs, remittances and FDI in total external financing and GDP in Laos

a. Share of total external financing (%)



b. Share of GDP (%)

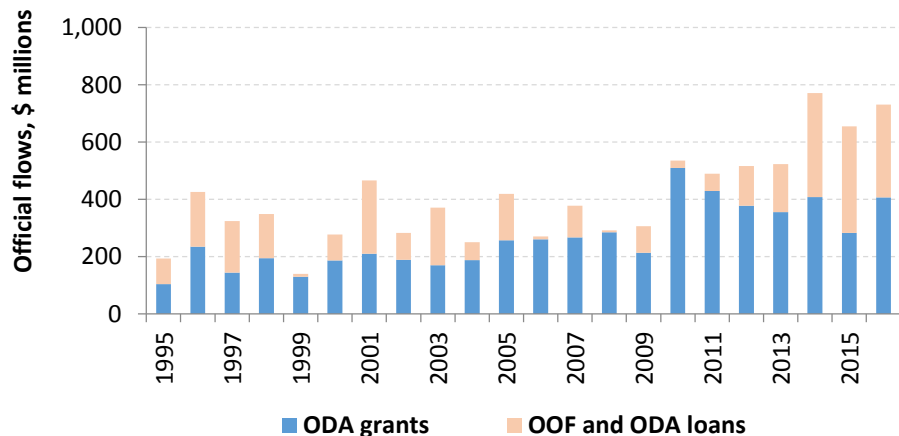


Development Finance Landscape: Financing Instruments

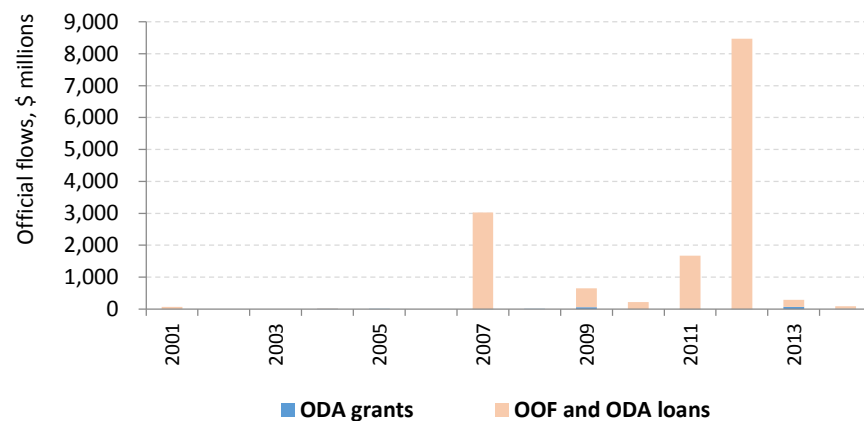
- **Financing instruments: ODA loans have been increasingly used since 2011.**
 - Share of loans in total official finance rose from 5% in 2010 to 44% in 2016.
 - Chinese official finance has been largely dominated by loans, which increased from \$1,674 million in 2011 to \$8,470 million in 2012.

Fig.4 Grant and loan composition in official finance to Laos, constant prices (\$ millions)

a. DAC's official finance



b. Chinese official finance

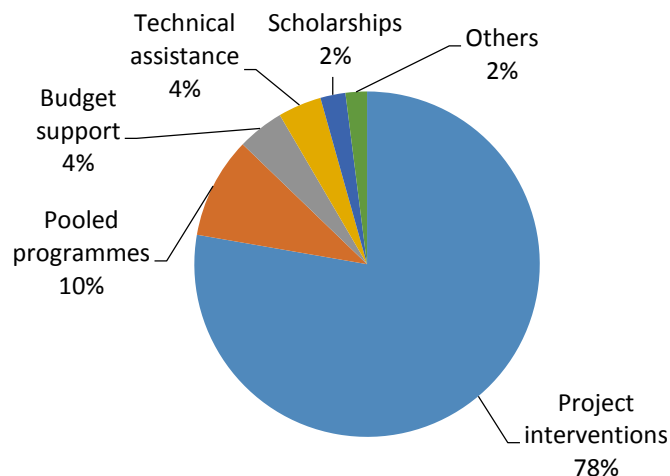


Development Finance Landscape: Distribution Channels

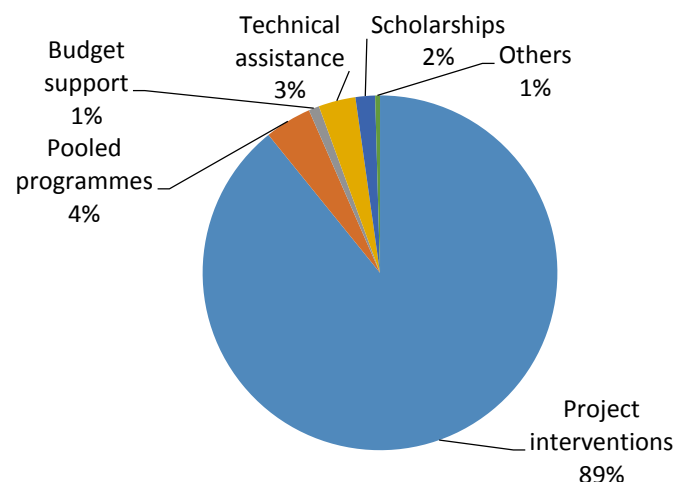
- **Financing channels: project interventions.**
 - Share of project-intervention finance in total official finance flows rose from 78% during 2010-2012 to 89% during 2014-2016.

Fig.5 Distribution channels of official finance, % of total official finance

a. Annual average, 2010-2012*



b. Annual average, 2014-2016

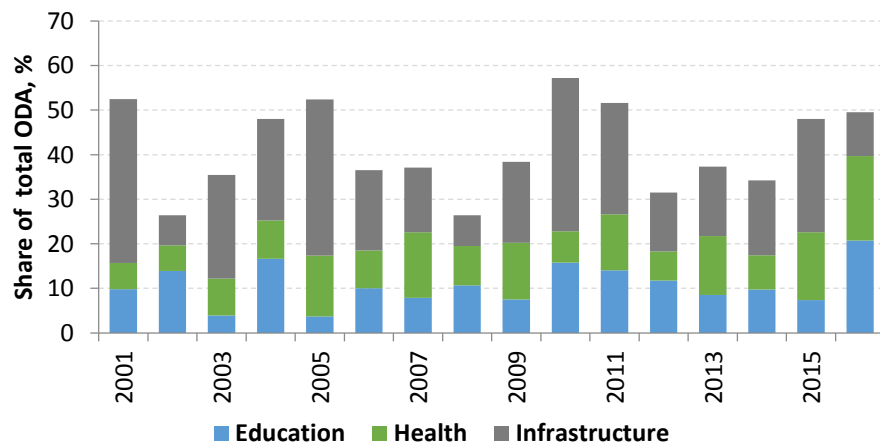


Development Finance Landscape: Sectoral Allocation

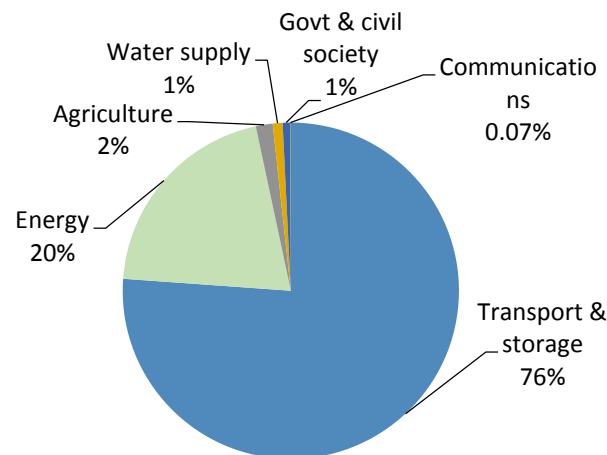
- **Sectoral allocation: DAC's ODA shifted from infrastructure to education and health; Chinese OOFs remained in transport sector.**
 - Share of education ODA in total ODA fell from 15.8% in 2010 to 7.4% in 2015.
 - Share of infrastructure ODA in total ODA fell from 34.4% in 2010 to 9.9% in 2016.
 - Share of health ODA in total ODA increased from 7.0% to 19.0% over the same period.

Fig.6 Allocation of DAC's ODA and Chinese OOFs to Laos by sector (% of total)

a. DAC's ODA, 2001-2016



b. Chinese OOFs, 2010-2014

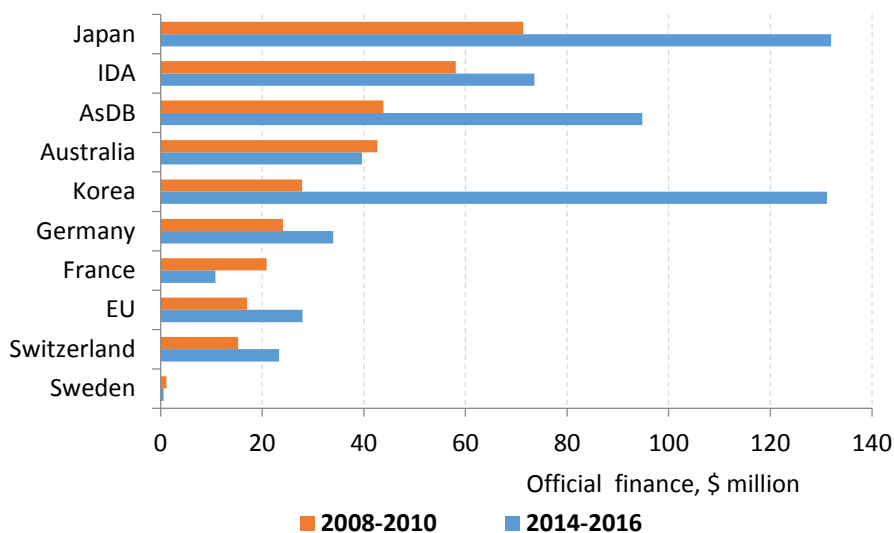


Development Finance Landscape: Key Financiers

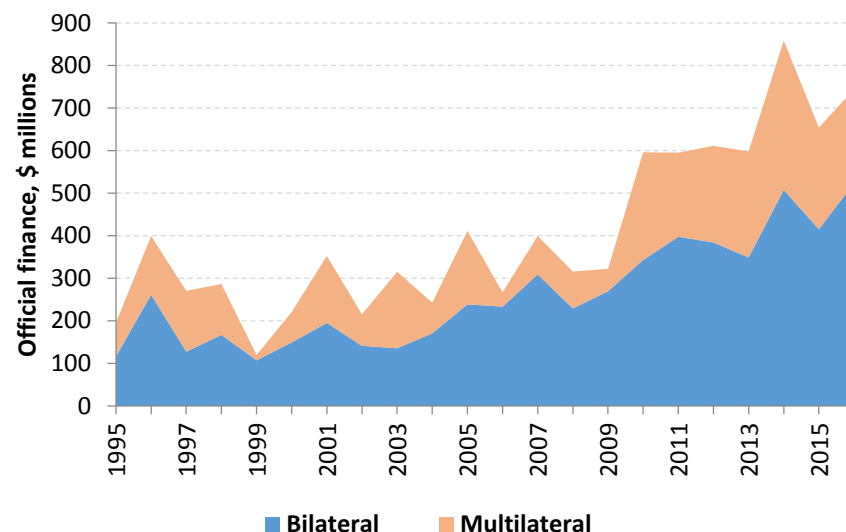
- **Key financiers:** Japan, Korea, ADB, IDA, and Australia. Korea changed from 5th (2008-10) to 2nd (2014-16).
- **Source of ODF:** Bilateral dominated multilateral official flows.

Fig.7 Key financiers of DAC's official finance flows to Laos

a. Rankings: top 10 donors



b. Volumes: bilateral vs. multilateral

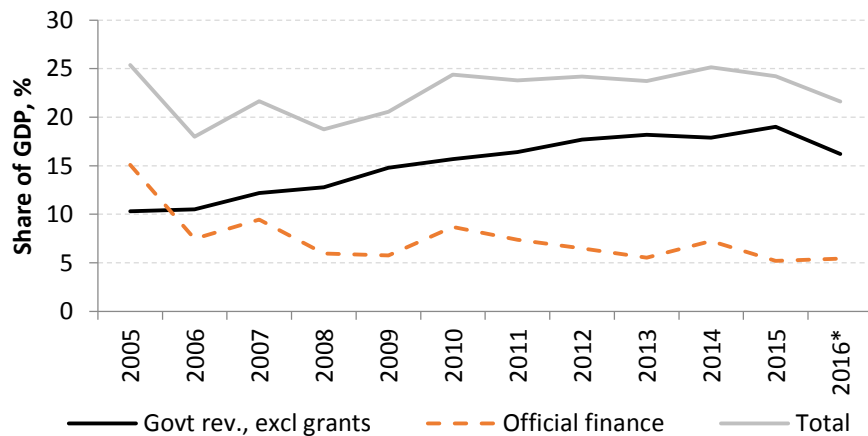


Public Finance Landscape: Public Revenues

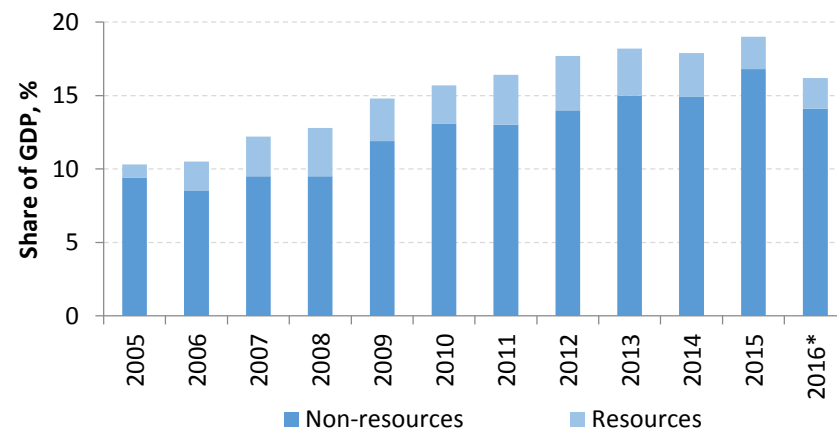
- **Public revenues: increased in parallel to country's economic development.**
 - Govt. revenues as a share of GDP rose from 15.7% in 2010 to 16.2% in 2016.
 - Official finance as a share of GDP fell from 8.7% in 2010 to 5.4% in 2016.

Fig.8 Development of official finance and public revenues in Laos, % of GDP

a. Trend of official finance and government revenue



b. Sources of government revenues

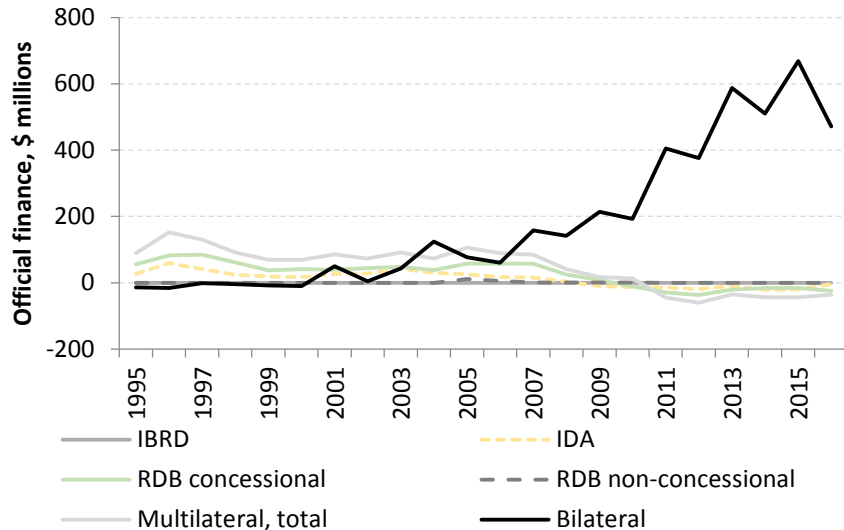


Public Finance Landscape: External Borrowings

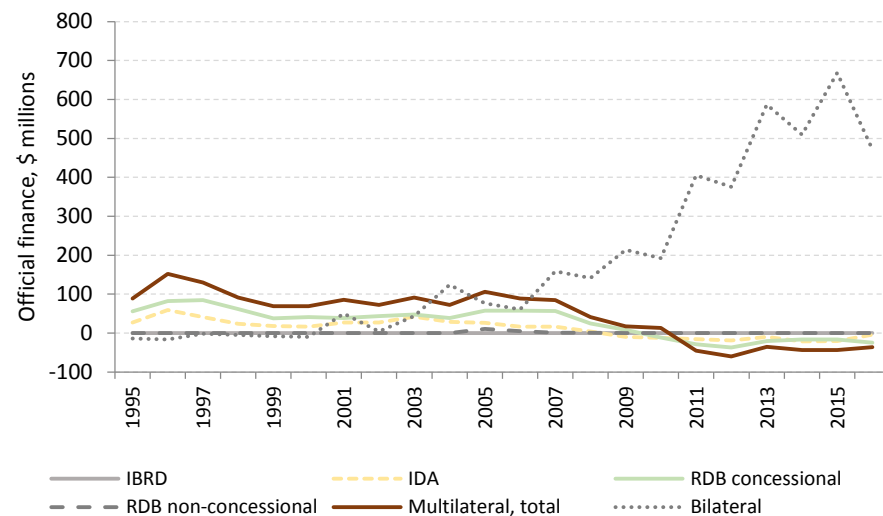
- **External borrowing:** **Bilateral debts increased rapidly since 2006.**
 - **Increase in bilateral debt:** Net bilateral lending to Laos rose by 145% from \$0.19 billion in 2010 to \$0.47 billion in 2016 (Fig.9a).
 - **Decrease in multilateral debt:** Net multilateral lending to Laos has been negative since 2011 (Fig.9b).

Fig.9 Net financial flows of bilateral and multilateral lending to Laos, \$ millions

a. Bilateral, total



b. Multilateral, total

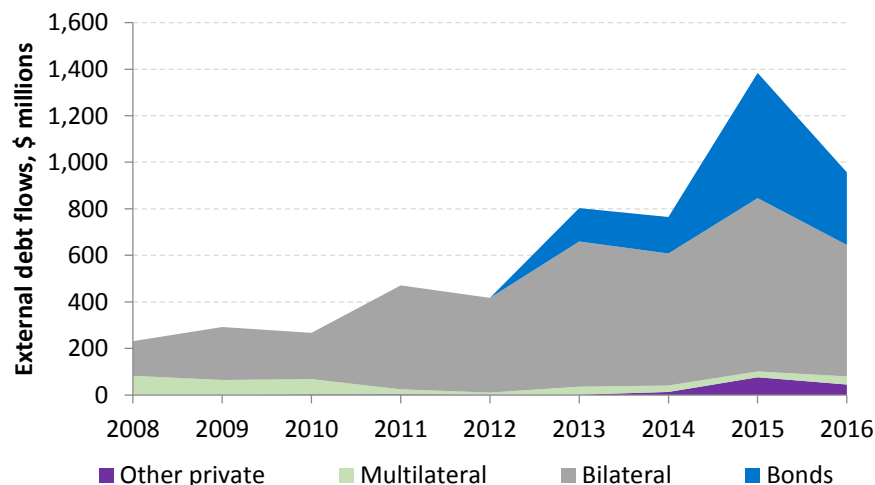


Public Finance Landscape: Tools for External Borrowings

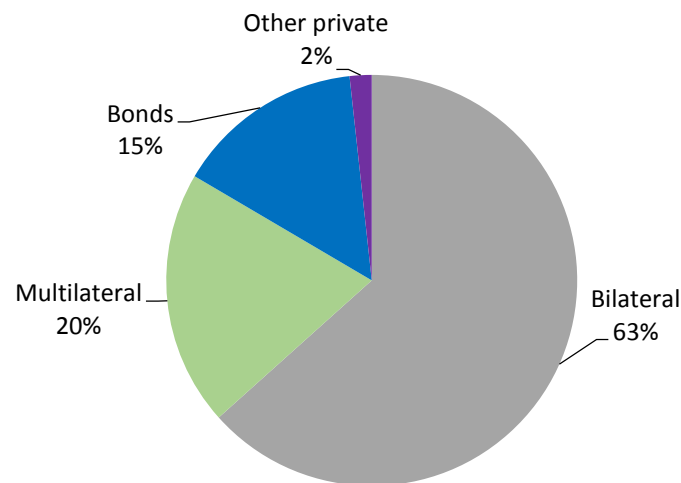
- **Tools for external borrowing:** bilateral borrowing and bond issuance.
 - GoL bonds to private creditors rose from \$143 million in 2013 to \$538 million in 2015 and \$312 million in 2016.
 - Stock of outstanding government bonds reached \$1,082 million in 2016, accounting for 15% of total external debts.

Fig.10 Laos' external debt, disbursed amount (\$ millions)

a. Flows, 2008-2016



b. Stock, as of 2016

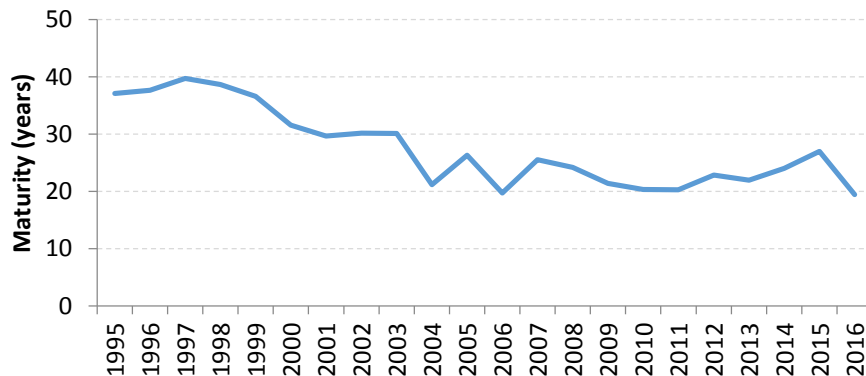


Public Finance Landscape: Terms & Conditions of External Debts

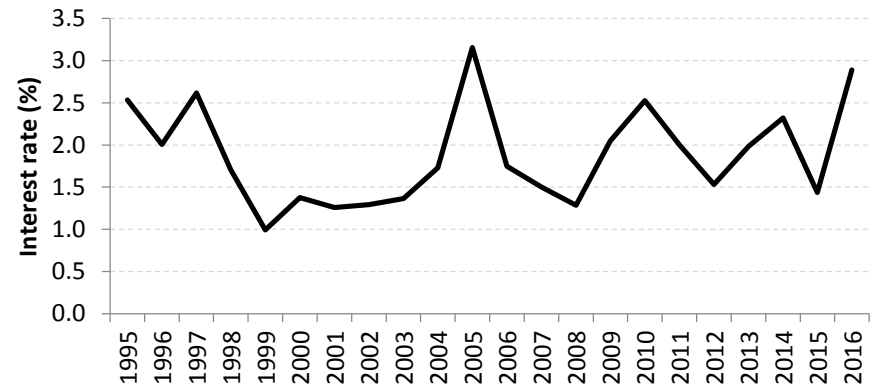
- **Terms and conditions:** downward trend of maturity and upward trend of interest rate.
 - Maturity on new official debt flows increased from 20.3 years in 2010 to 27 years in 2015 but fell to 19.4 years in 2016.
 - Interest rates on new commitments on official debt flows decreased from 2.5% in 2010 to 1.4% in 2015 but rose to 2.9% in 2016 .

Fig.11 Average maturity and interest rate on new external official debt

a. Average maturity (years)



b. Average interest rate (%)



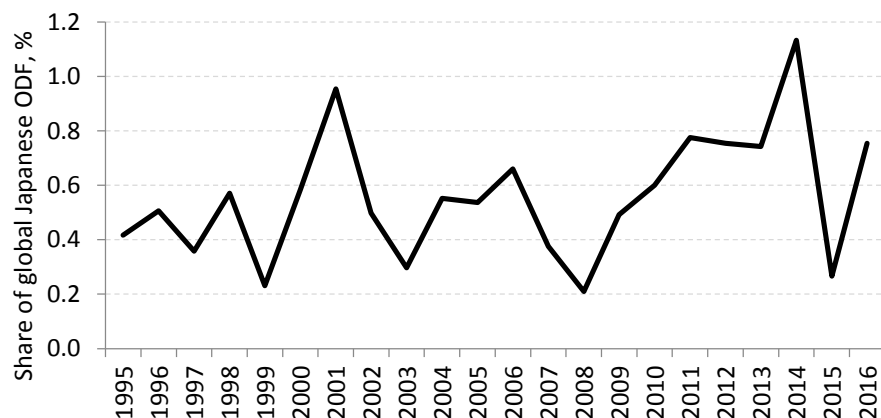
Donor Analysis: Japan Volume

Japanese official inflows have increased and shifted from concessional to less-concessional finance in the infrastructure sector since 2012.

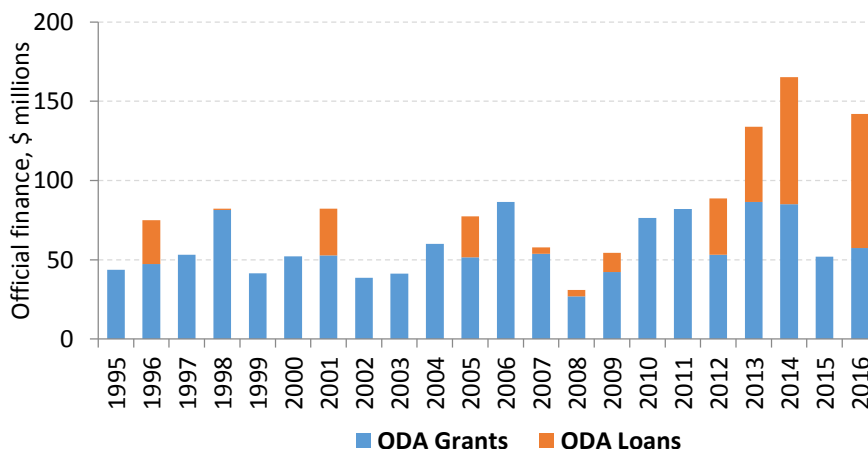
- More Japanese ODF has been allocated to Laos since 2010.
- Japanese ODF has shown an upward trend of official finance with an increase in ODA loans since 2012.

Fig.12 Japanese official finance to Laos, commitment amount, 1995-2016

a. Share of Japanese ODF to Laos, % of global Japanese ODF



b. Volume of Japanese ODF to Laos, \$ millions



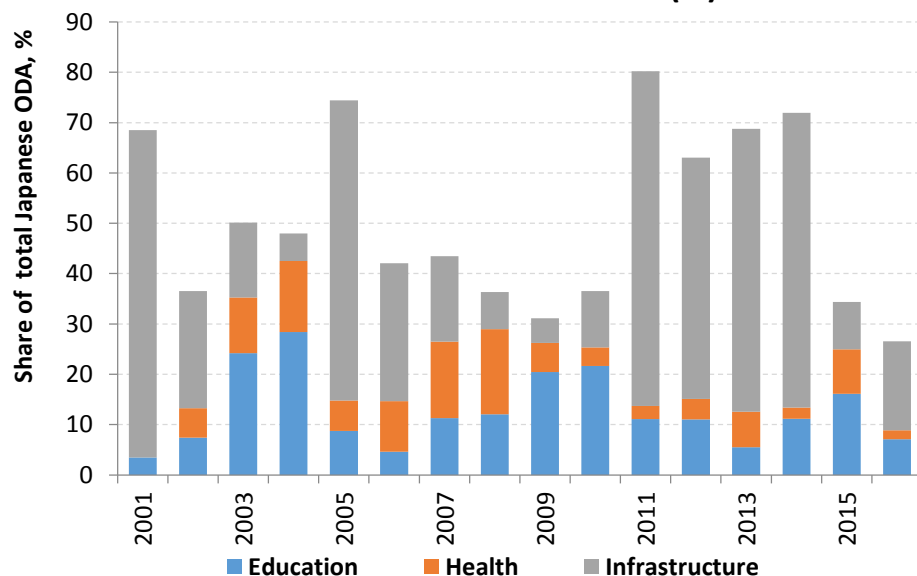
Donor Analysis: Japan

Sectoral Allocation and Financing Instruments

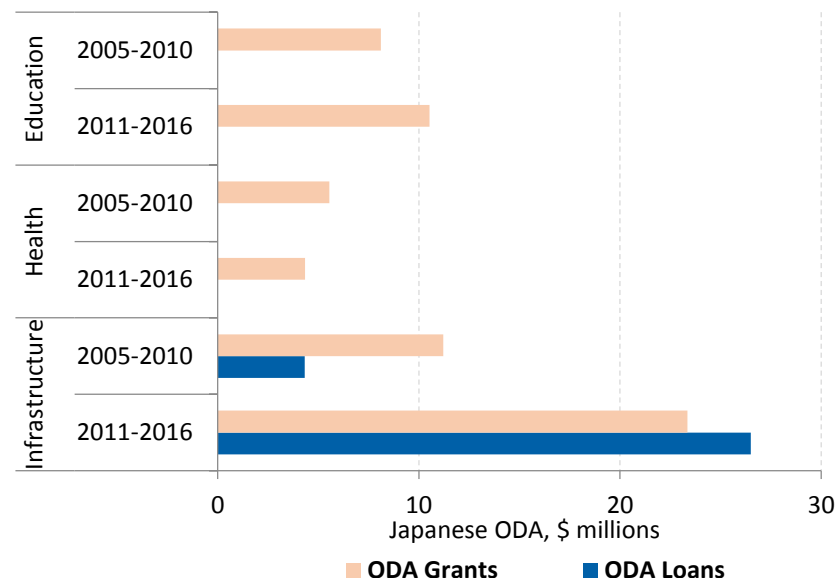
- Sectoral allocation: **concentrated in the infrastructure sector**
- Financing instruments: **combination of grants and loans in infrastructure; solely grants in health and education.**

Fig.13 Japanese official finance to Laos by sector and financing instruments, constant prices, 2001-2016

a. Sectoral allocation of ODA (%)



b. Financing instruments



Donor Analysis: Rep. of Korea

Volume

Korean official inflows have increased and shifted from concessional to less-concessional finance in the health sector since 2014.

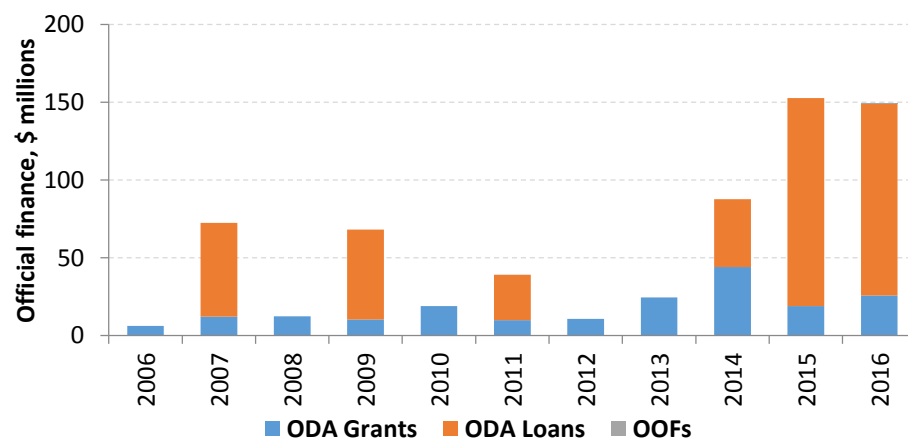
- More Korean ODF has been allocated to Laos since 2012.
- Korean official finance flows to Laos have shown an upward trend driven ODA loans since 2010.
 - Official finance rose by 74% from \$40 million in 2006-09 to \$69 million in 2010-16.
 - ODA loans increased in absolute term but decreased in relative to ODA grants.

Fig.14 Korean official finance to Laos, commitment amount (constant prices), 2006-16

a. Share of Korean ODF to Laos, % of global Korean ODF



b. Volume of Korean ODF to Laos, \$ millions

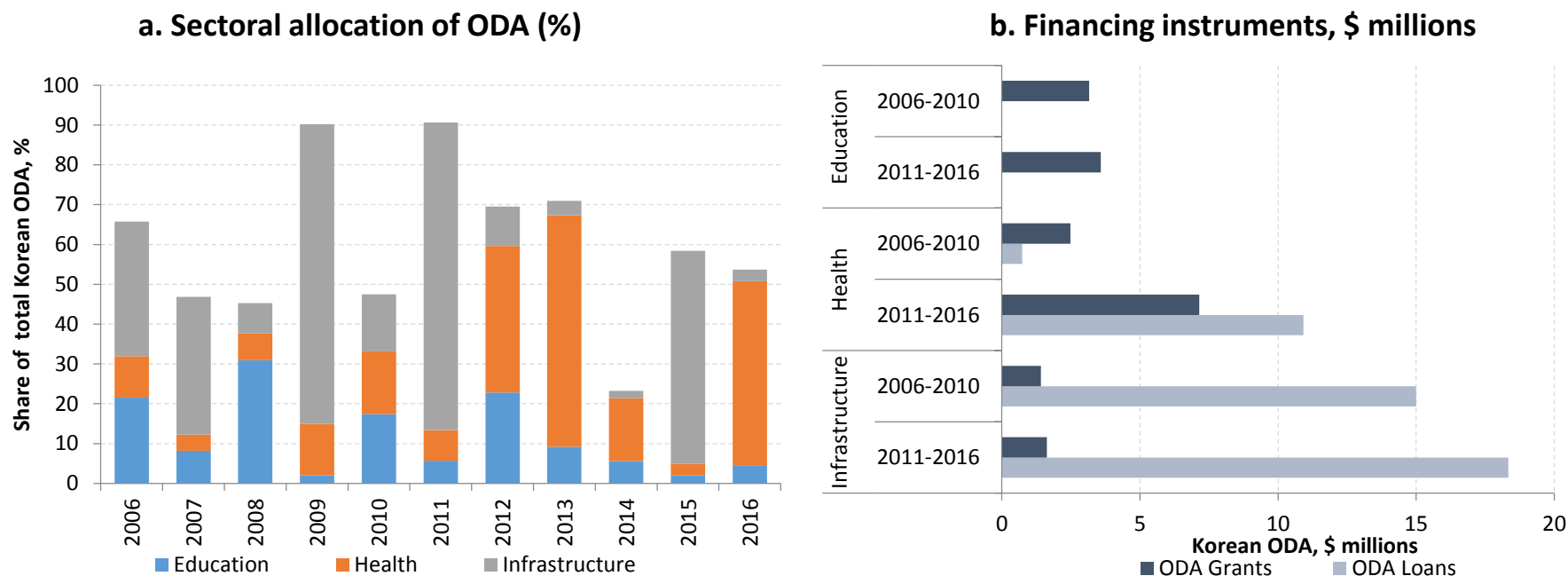


Donor Analysis: Rep. of Korea

Sectoral Allocation and Financing Instruments

- Sectoral allocation: **changed from education to health.**
- Financing instruments: **changed from grants to loans in health; intensified the use of loans in infrastructure.**

Fig.15 Korean ODA to Laos by sector and financing instruments, constant prices, 2001-16



Donor Analysis: Australia

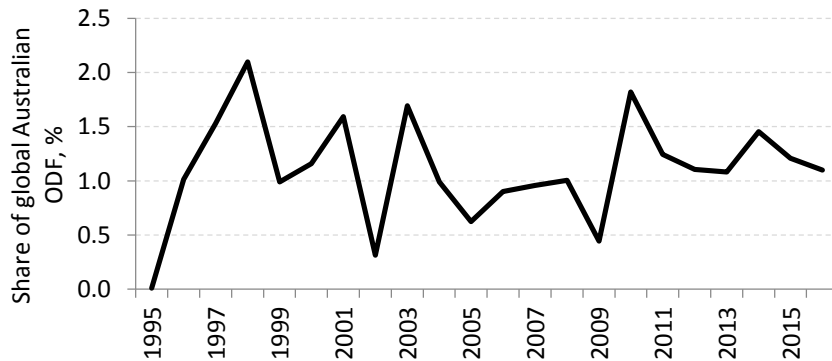
Volume

Australian official inflows have decreased, but remained concessional with ODA grants in the social sector.

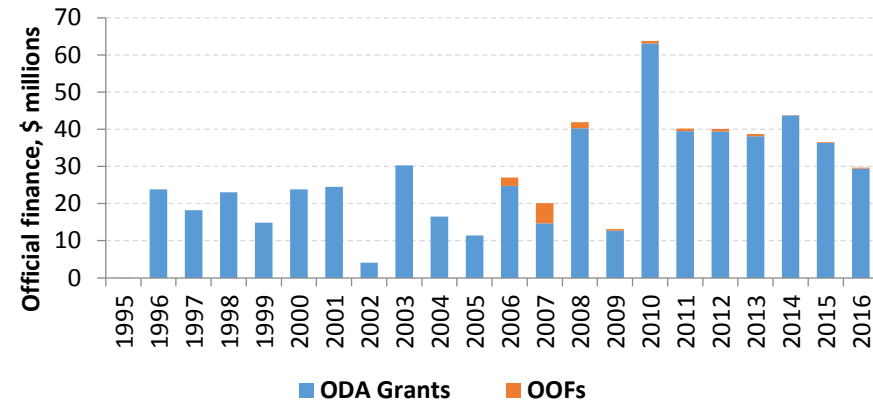
- The proportion of Australian ODF to Laos has decreased in relative its global ODF and in its absolute term since 2010.
- Australian ODF has been dominated by ODA grants.

Fig.16 Australian official finance to Laos, constant prices, 1995-2016

a. Share of Australian ODF to Laos, % of global Australian ODF



b. Volume of Australian ODF to Laos, \$ millions

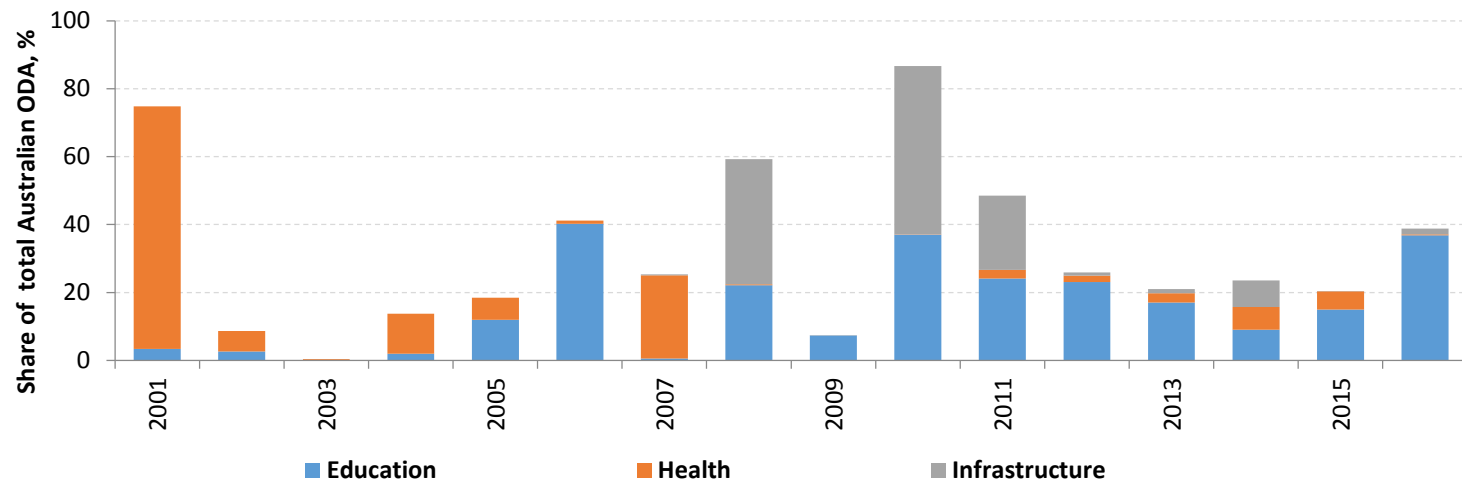


Donor Analysis: Australia

Sectoral Allocation and Financing Instruments

- Sectoral allocation: **changed from health to infrastructure.**
- Financing instruments: **only grants.**

Fig.17 Sectoral allocation of Australian ODA grants, constant prices, 1995-2016



Summary of ODF's Preliminary Findings

Objective and indicators	Change: Pre-2010 vs. Post-2010			
	Aggregate	Japan	Korea	Australia
Obj.: Does LMIC affect ODF to Laos?	Yes, but remain weak	Yes, but remain weak	Yes, but remain weak	No
Donor budget				
Share of global donor ODF	Increased	Increased	Increased	Decreased
Donor response: ODF				
Volume	Increased	Increased	Increased	Decreased
Instrument	Increased ODA loans	Increased ODA loans	Increased ODA loans	Unchanged - ODA grants
Channel	Unchanged - Proj. intervention	—	—	—
Sector	Increased education & health	Increased Infrastructure	Increased health	Increased education
GoL response: Public finance				
Public revenue	Increased	—	—	—
External borrowing	Increased	—	—	—
Private finance				
FDI	Increased	—	—	—
Remittances	Unchanged	—	—	—

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Data visualization

- **Data visualization** is a process that **transforms raw data into an image**, which is **readable** by viewers and supports **exploration** and **communication** of the data.
- **Data visualization** is used:
 - To conduct **analyses** of different forms of data
 - To support **communication** of complex information to a wide range of stakeholders

Data visualization: Three principles

Principle 1: Show the data – Emphasize data of interest

Principle 2: Reduce the clutter – Eliminate unnecessary elements of visual elements

- dark gridlines
- unnecessary tick marks, labels, text, icons, pictures, or dimensions
- ornamental shading and gradients

Principle 3: Integrate the text and the graph – contain enough information to stand alone

Process of data visualization

- **Know the message – purpose of the chart**
- **Arrange data**
- **Prepare chart**
- **Format chart**

Purpose of data visualization and chart type

Chart type	Purpose			
	Trend	Comparison	Relationship	Parts to whole
Line	✓		✓	
Bar	✓	✓		
Bubble		✓	✓	
Pie		✓		✓

Charting change in ODA inflows to Laos

Purpose	Chart type	Variable	Data source
Laos' position in total LDC recipients of ODA	Horizontal bar	ODA per capita; share of ODA in GNI	World Bank's World Development Indicator (http://data.worldbank.org/data-catalog/world-development-indicators)
Correlation of ODA and LDC criteria	Bubble	ODA per capita; human asset index; economic vulnerability index; GNI per capita	UN database (http://www.un.org/en/development/desa/policy/cdp/ldc/ldc_data.shtml)
Trends of total, bilateral, and multilateral ODA	Line	Total ODA; bilateral ODA; multilateral ODA	OECD database (http://stats.oecd.org/Index.aspx?QueryId=58197)
Structure of Laos' ODA inflows in 1995-2000 and 2010-2014	Pie	ODA by sector	OECD database (http://stats.oecd.org/Index.aspx?QueryId=58197)

Horizontal bar chart: Laos' position in total LDC recipients of ODA

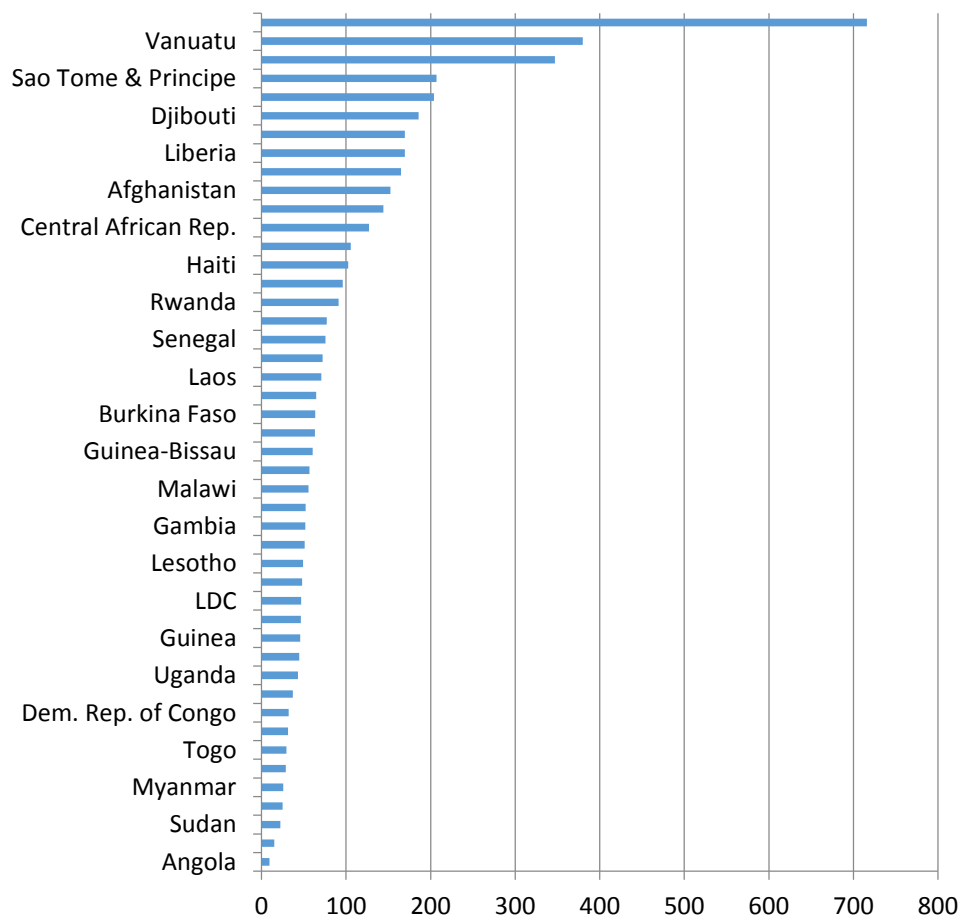
Table 1: ODA per capita, economic vulnerability index, and human asset index

No.	Countries	EVI	HAI	ODA pc (\$)	No.	Countries	EVI	HAI	ODA pc (\$)
1	Kiribati	71.5	86.3	716	24	Guinea-Bissau	53.6	44.8	60
2	Vanuatu	47.7	81.3	380	25	Benin	31.2	50.1	57
3	Solomon Islands	50.8	71.7	347	26	Malawi	41.1	53.7	56
4	Sao Tome & Principe	39.2	77.4	207	27	Cambodia	38.3	67.2	52
5	Timor-Leste	55.0	57.4	204	28	Gambia	70.7	62.1	52
6	Djibouti	37.7	54.6	186	29	United Rep. of Tanzania	28.8	52.0	51
7	Bhutan	40.2	67.9	170	30	Lesotho	42.9	62.9	49
8	Liberia	57.9	46.2	169	31	Niger	37.6	34.7	48
9	South Sudan	56.0	29.1	165	32	Burundi	49.9	41.0	46
10	Afghanistan	35.1	43.1	153	33	Guinea	24.9	38.7	46
11	Sierra Leone	48.9	34.8	144	34	Yemen	35.4	59.8	44
12	Central African Rep.	33.5	22.9	127	35	Uganda	31.8	53.6	43
13	Somalia	36.3	7.8	105	36	Ethiopia	31.8	39.2	37
14	Haiti	34.1	39.3	102	37	Dem. Rep. of Congo	30.3	29.9	32
15	Comoros	45.8	54.2	96	38	Nepal	26.8	68.7	31
16	Rwanda	40.7	51.5	91	39	Togo	33.6	58.7	29
17	Mozambique	38.1	41.7	77	40	Chad	46.0	24.4	29
18	Senegal	33.0	55.9	75	41	Myanmar	33.7	72.7	26
19	Mali	33.3	45.5	72	42	Madagascar	36.7	53.5	25
20	Laos	36.2	60.8	71	43	Sudan	49.9	56.6	22
21	Mauritania	41.2	49.5	65	44	Bangladesh	25.1	63.8	15
22	Burkina Faso	39.5	36.5	64	45	Angola	39.7	41.9	10
23	Zambia	45.6	40.8	63		LDC	41.4	51.5	47

Note: ODA is in 2014; EVI and HAI are in 2015. 45/48 are used due to unavailable ODA data for Equatorial Guinea, Eritrea, and Tuvalu.

LDC graduation criteria: 1. GNI pc \geq 1.242; 2. HAI \geq 66; 3. EVI \leq 32

Fig.18A: ODA per capita (US\$) in LDCs, 2014

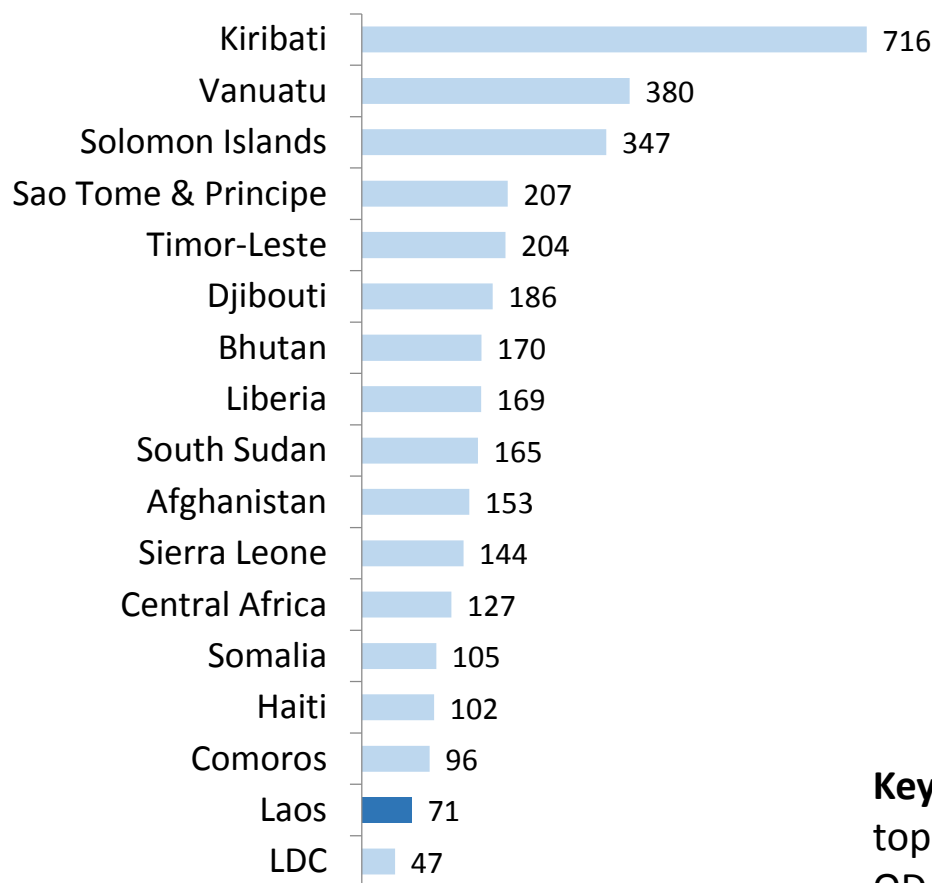


Analyzing Fig.1A based on the principles of data visualization:

- **P1. Show data:** Lao data is not illustrated in the chart.
- **P2. Reduce the clutter:** there are vertical gridlines.
- **P3. Integrate the text and the chart:** text is integrated into the chart but not emphasize.

Fig.18B: ODA per capita (US\$) in LDCs, 2014

(Redesigned chart)

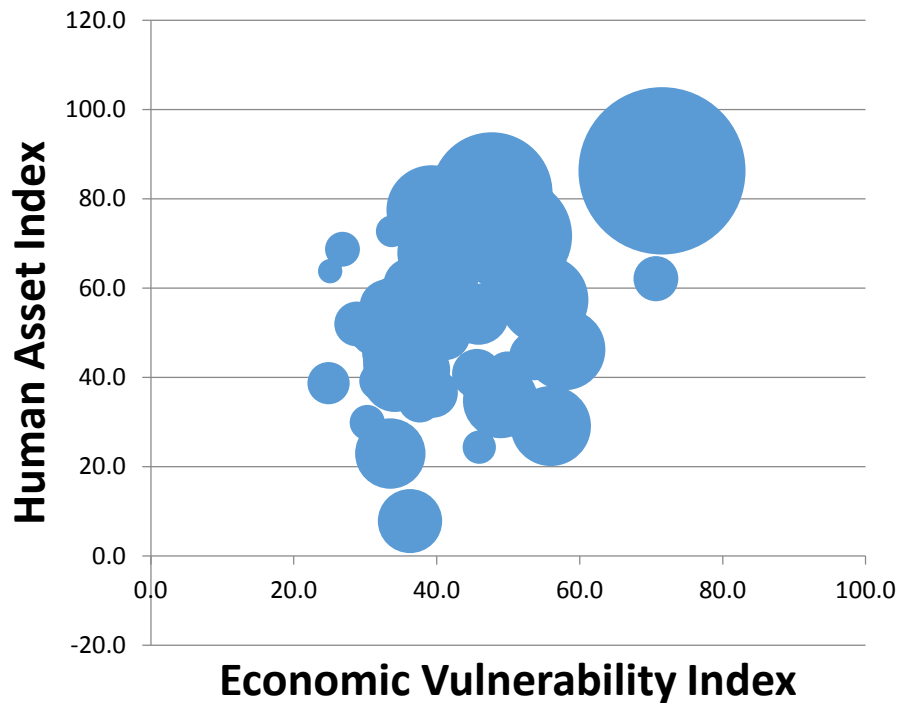


Redesigned chart to emphasize the ranking:

- **P1. Show data:** (1) compare Laos' ODA per capita with that of 15 LDCs; (2) show values of ODA per capita.
- **P2. Reduce the clutter:** remove vertical gridlines.
- **P3. Integrate the text and the chart:** use dark blue bar to emphasize Laos.

Key message: Laos' ODA per capita is lower than the top 15 LDC recipients, but is higher than the average ODA per capita of LDCs.

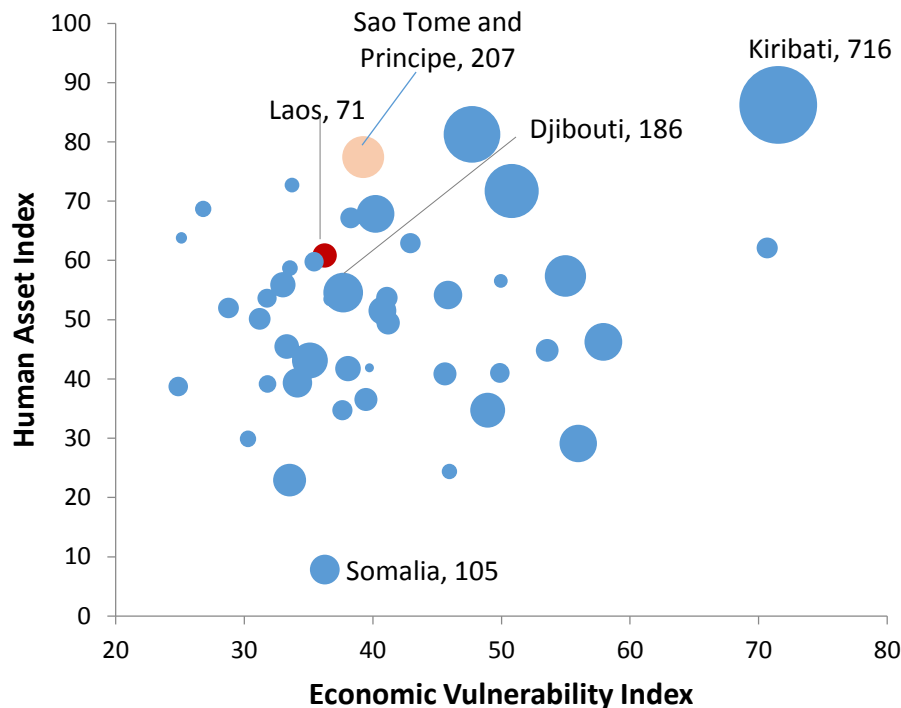
Fig.19A: Correlation of Human Asset Index and Economic Vulnerability Index



Analyzing Fig.2A based on the principles of data visualization:

- **P1. Show data:** Lao data is not illustrated in the chart.
- **P2. Reduce the clutter:** there are horizontal gridlines; font size of axis titles is too big; circles are too big.
- **P3. Integrate the text and the chart:** no country name and data exist in the chart.

Fig.19B: Correlation of Human Asset Index and Economic Vulnerability Index (Redesigned chart)

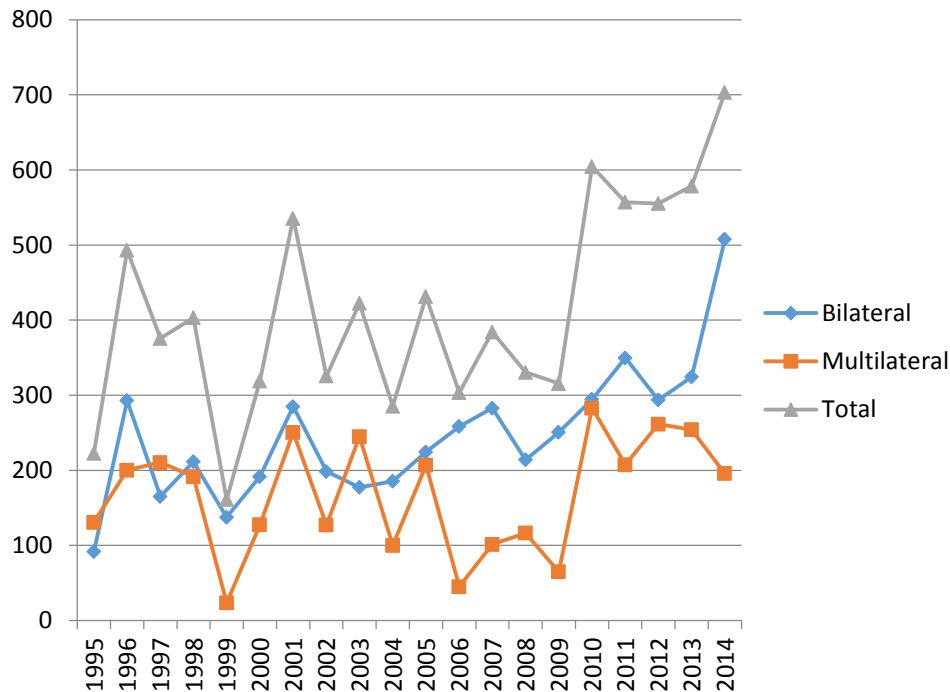


Redesigned chart to support comparative analysis of ODA and LDC criteria:

- **P1. Show data:** (1) reduce bubble size; (2) show values of ODA per capita for Laos and other countries for comparison.
- **P2. Reduce the clutter:** remove horizontal gridlines; reduce font size of axis titles.
- **P3. Integrate the text and the chart:** country names are shown in the chart.

Key message: the correlation between ODA per capita and LDC criteria in Laos is in line with other LDCs, but there is an opportunity to attract more ODA to improve its HAI as shown by Sao Tome and Principe.

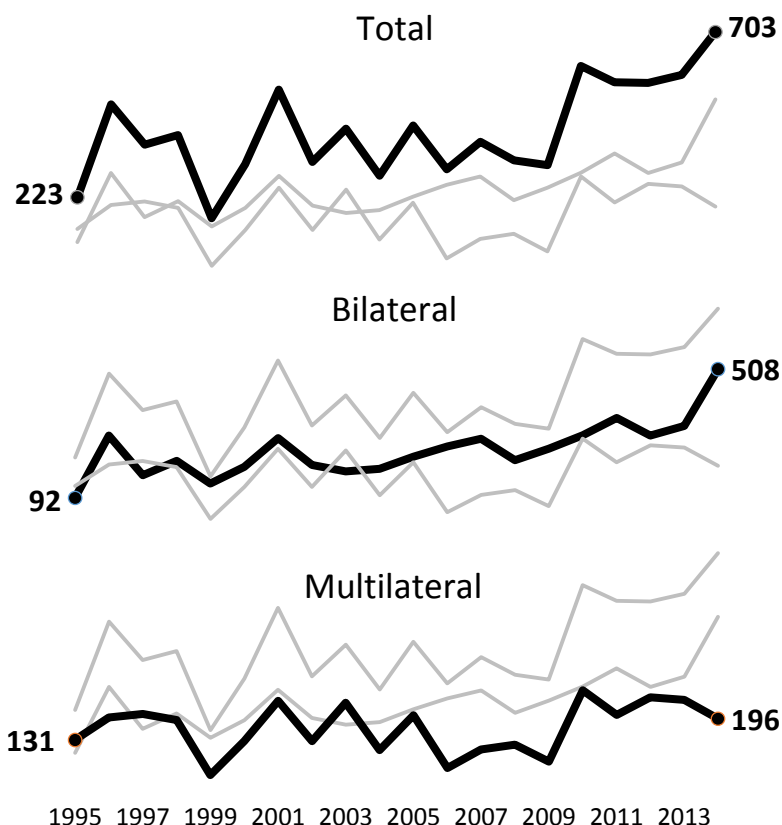
Fig.20A: Development of Laos' ODA inflows by bilateral donors and multilateral institutions, 1995-2014
(million US\$ in 2014)



Analyzing Fig.3A based on the principles of data visualization:

- **P1. Show data:** Any single trend is obscured because data markers make it difficult to follow any single series.
- **P2. Reduce the clutter:** there are horizontal gridlines.
- **P3. Integrate the text and the chart:** the legend is located far from the data and the order of the legend does not match the order of the lines.

Fig.20B: Development of Laos' ODA inflows by bilateral donors and multilateral institutions, 1995-2014
(million US\$ in 2014) (Redesigned chart)

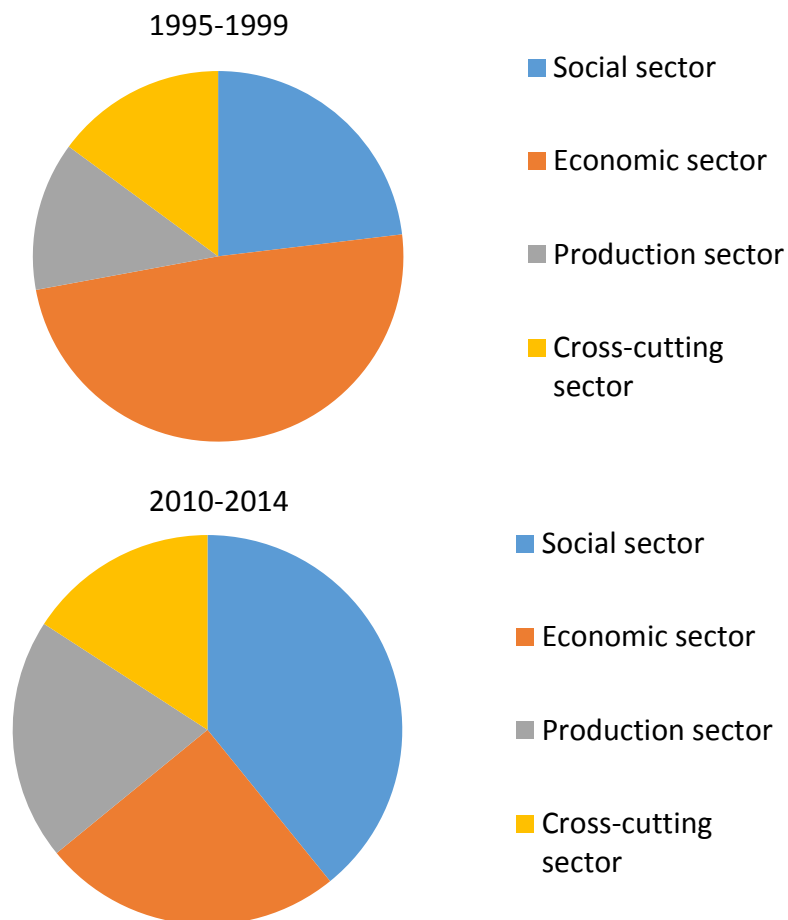


Redesigned chart to emphasize the trends over time:

- **P1. Show data:** split information into three smaller charts to highlight the information in each line within the context of all the data.
- **P2. Reduce the clutter:** remove horizontal gridlines.
- **P3. Integrate the text and the chart:** use a data label at either end of the main line.

Key message: ODA inflows to Laos over the period 1995-2014 show an upward trend, which is mainly driven by the rapid increase in bilateral ODA.

Fig.21A: Structure of Laos' ODA inflows by sectors, 1995-1999 and 2010-2014 (million US\$ in 2014)

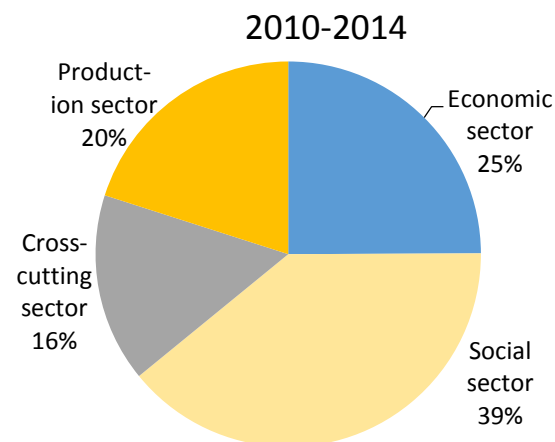
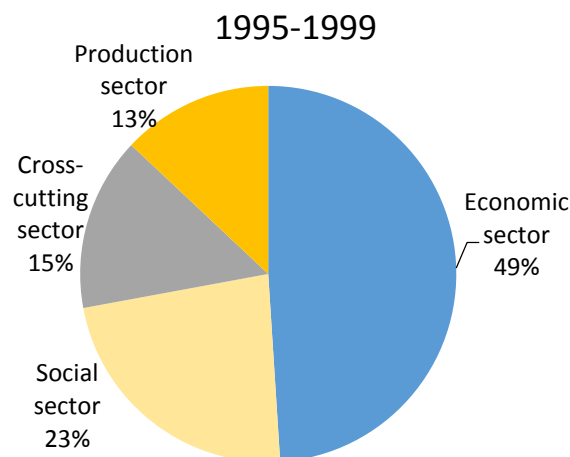


Analyzing Fig.4A based on the principles of data visualization:

- **P1. Show data:** the order of the segments is not positioned so that the largest starts at the 12 o'clock position.
- **P3. Integrate the text and the chart:** difficult to match color of segments with their respective legends.

Fig.21B: Structure of Laos' ODA inflows by sectors, 1995-1999 and 2010-2014

(million US\$ in 2014)



Redesigned chart to emphasize parts to whole:

- **P1. Show data:** arrange the order of segments from the largest to smallest one.
- **P3. Integrate the text and the chart:** add labels that integrate the data.

Key message: The structure of ODA inflows to Laos in 1995-1999 is different from that in 2010-2014. In 1995-1999, ODA was concentrated in economic sector (49% of total ODA), followed by social sector (23%). In 2010-2014, ODA was concentrated in social sector (39%), followed by economic sector (25%).

Outline

Session 1: Impact of LMIC on development finance

1.1 Conceptual framework

1.2 Data sources and terminology

1.3 Preliminary findings on the changing landscape of development finance in Laos

Session 2: Descriptive analysis of development finance

2.1 Techniques for descriptive analysis

2.2 Group exercises

Exercises on descriptive analysis

1. **Use Horizontal Bar Chart to show the ranking of the top 10 ODA donors for Laos in 2000 and 2014** (data in worksheet 'DONOR')
 - a) Sort data from largest to smallest
 - b) Keep the top 10 donor countries
 - c) Sort data from smallest to largest
 - d) Plot the horizontal bar chart and format it as Fig.18B
 - e) Is there any change in the ranking of donors between 2000 and 2014?

Exercises on descriptive analysis

- 2. Use Pie Chart to show the structure of ODA in specific sector for 2000 and 2014 (data in worksheet 'SECTOR')**
- a) Sort ODA data from largest to smallest
 - b) Plot the pie chart and format it as Fig.21B
 - c) Is there any change in the structure of ODA between 2000 and 2014?

Summary of Descriptive Analysis

- Descriptive analysis is the transformation of raw data into a form that will make them easy to understand and interpret; rearranging, ordering, and manipulating data to generate descriptive information.
- Effective visualizations show the data to tell the story, reduce clutter to keep the focus on the important points, and integrate the text with the charts to transfer information efficiently.
- To create effective visualizations, consider the needs of target audience how the numbers, facts, or stories will help them understand your ideas and arguments.

Thank You