

A world map is shown in a dark, muted color palette. Overlaid on the map is a complex network of thin, brown, hand-drawn lines that connect various geographical locations. Small, solid black dots are placed at many of these connection points, particularly along the lines that cross the Atlantic and Pacific oceans, suggesting major trade hubs or shipping lanes. The overall aesthetic is that of a hand-drawn or analog data visualization.

INTERNATIONAL TIMBER TRADE

Digging into trade data

UE “FAR WEST”

- 18/09 | *Qualité et classement des bois*
- 12/11 | *Commerce inter. (round 1)*
- 18/11 | *Gestion des forêts tropicales*
- 21/11 | *Commercialisation des bois + Acteurs de la filière*
- **05/01 | Commerce inter. (round 2)** ←
- **14/01 | Visites de scieries**
- **16/01 | Commerce inter. (round 3)**





VISITES DE SCIERIES

- **Rendez-vous 6h30** au point de rendez-vous habituel pour le bus.
- **Ramenez vos écouteurs/casques filaires.**
- **Venir avec une tenue appropriée** à la visite d'entreprise. Privilégiez des chaussures fermées adaptées à la marche et des vêtements d'hiver pour résister au froid.
- **Consignes de sécurité** : rester en groupe, ne pas courir et dévier du parcours lors de la visite, pas de file d'inertie entre le premier et le dernier.



ÉVALUATION DE L'UE

- Structure obligatoire : titre, auteurs, résumé, table des matières, introduction, restitution structurée de la littérature répondant à la question posée, discussion des résultats issus de la littérature, conclusion, déclaration d'usage de l'IA, bibliographie.
- Maximum 10 pages en français (bibliographie non incluse).
- 10 références académiques ou institutionnelles (min. 5 en anglais).
- Référence explicite à la publication mobilisée dans le texte.
- Évaluation par les paires.

An aerial photograph of a winding asphalt road that curves through a dense, green forest. Several cars are visible on the road, traveling in different directions. The road has white dashed lines marking the lanes. The forest is lush and covers the surrounding hillsides.

OBJECTIVES

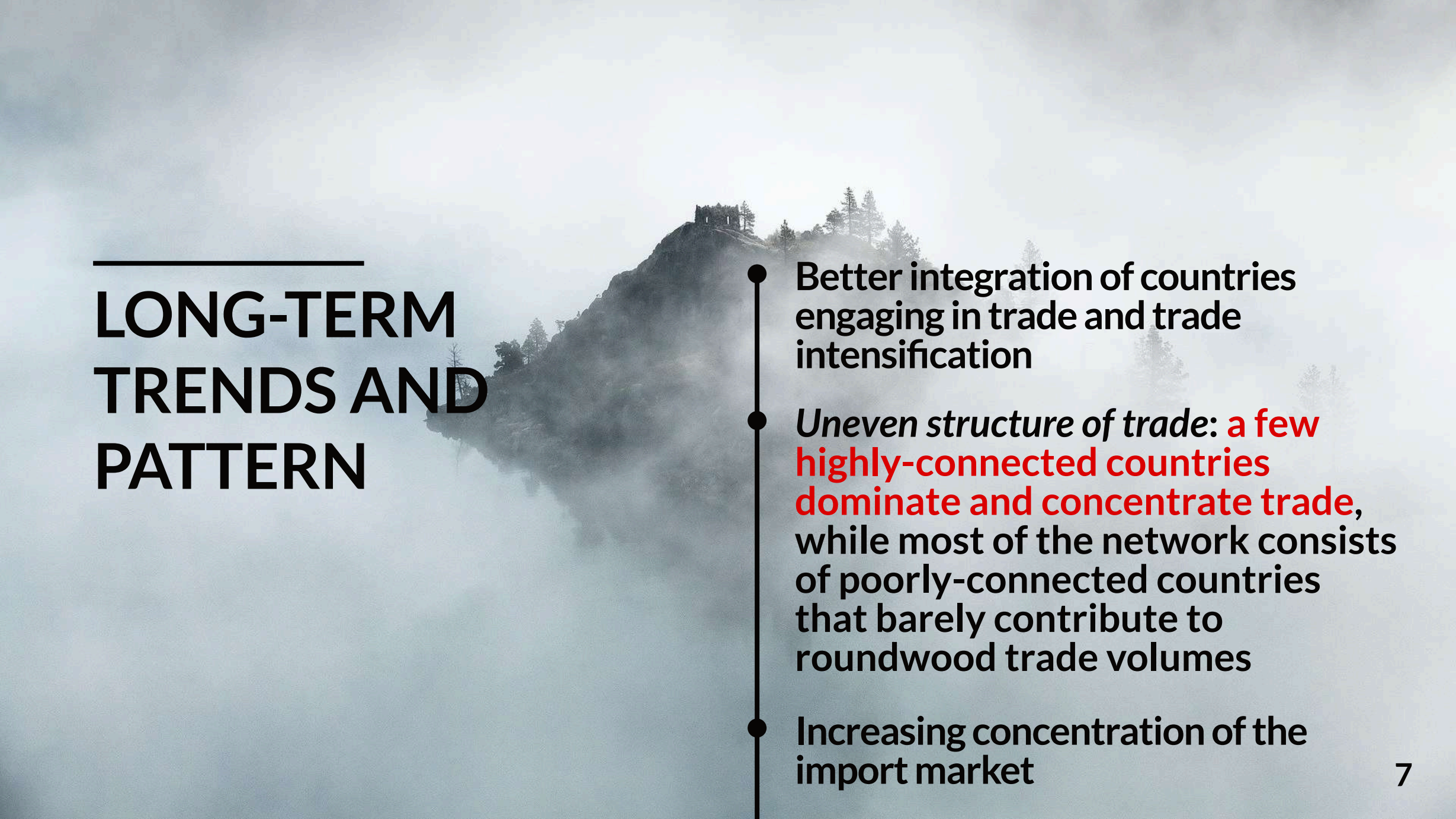
A course on international
timber trade

- 1 Taking a step back:
from France to
international forest
issues.
- 2 International trade
data for wood
products: scope
and limits.
- 3 Data storytelling:
what do the data say?
- 4 A game of trade:
theoretical intuitions
on trade mechanisms.



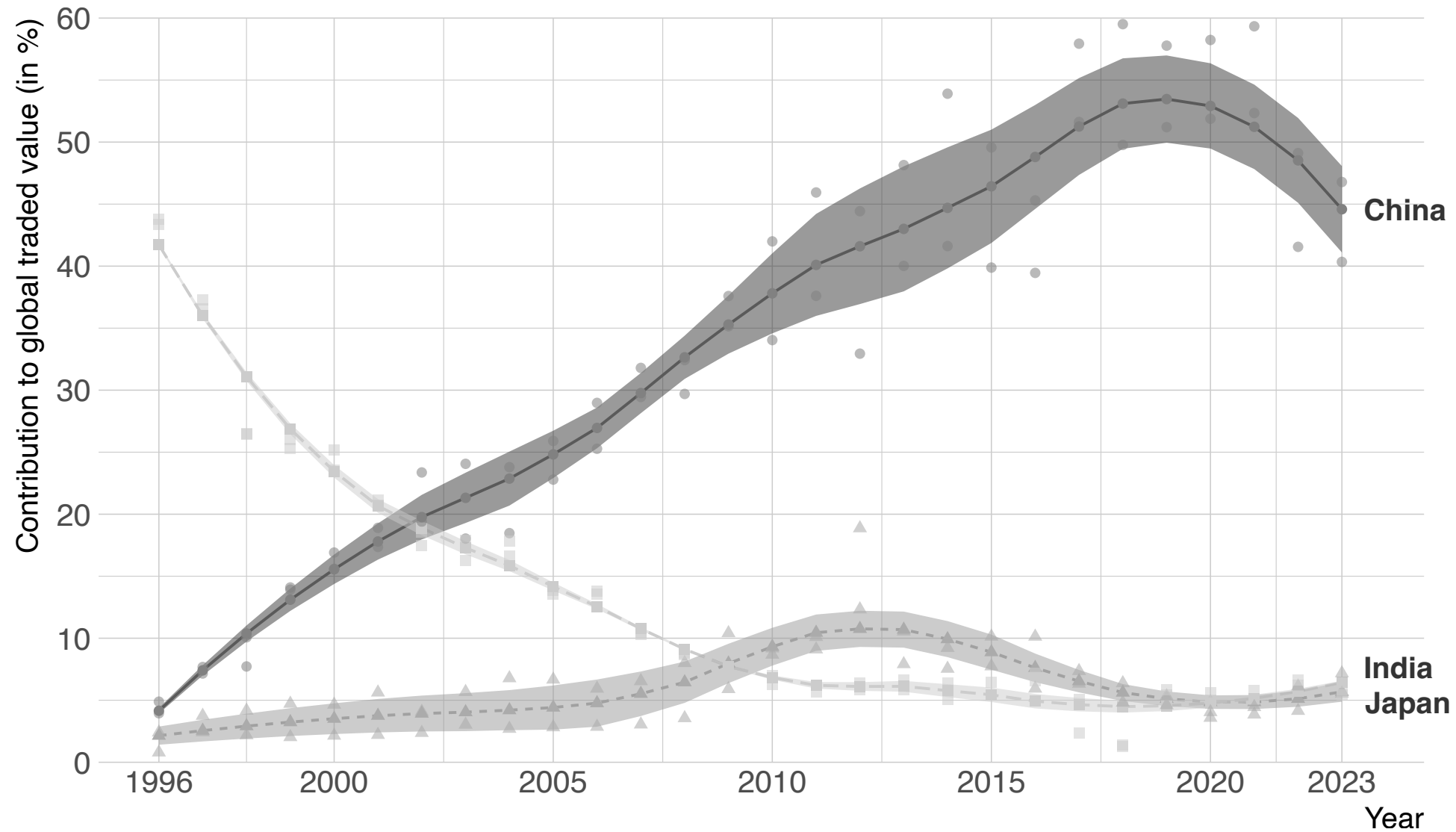
01

Reminder on the situation of international trade in roundwood (*from last time...*)



LONG-TERM TRENDS AND PATTERN

- Better integration of countries engaging in trade and trade intensification
- *Uneven structure of trade: a few highly-connected countries dominate and concentrate trade,* while most of the network consists of poorly-connected countries that barely contribute to roundwood trade volumes
- Increasing concentration of the import market





THE CHINESE PARADOX



**Government efforts in
spending**

+

**Market and policy reforms
driven by forest conservation
demand**

=

**Drastic expansion of Chinese
forestry and planted forest
extensive margins over the
last decades**

**BUT, low economic tree
planting efficiency**

+

Poor forest management

=

**Low stand quality and growth
rates**

**Domestic timber
consumption > domestic
production**



Government efforts in
spending

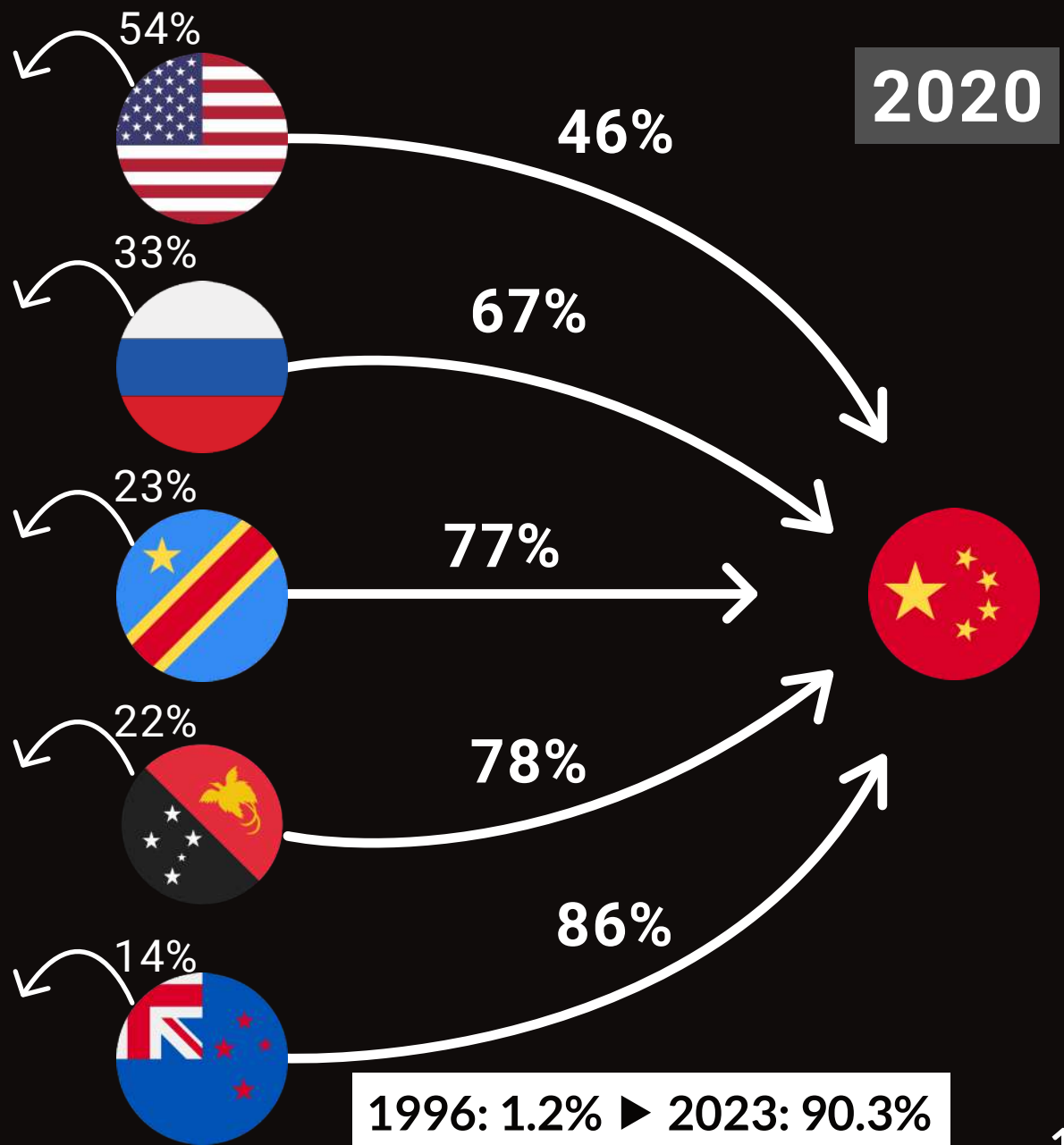
BUT, low economic tree
planting efficiency

**CHINA IS HIGHLY DEPENDENT ON IMPORTED WOOD
PRODUCTS, WHICH NOW ACCOUNT FOR
APPROXIMATELY HALF OF ITS TOTAL TIMBER SUPPLY**

forestry and planted forest
extensive margins over the
last decades

Domestic timber
consumption > domestic
production

CO-DEPENDENCE WITH CHINA



A close-up photograph of several stacked logs of roundwood. The logs are cut into circular cross-sections, revealing a light-colored, textured wood interior. The bark is dark and rough. The logs are arranged in a slightly overlapping manner, creating a sense of depth. A semi-transparent dark horizontal band is overlaid across the middle of the image, containing the title text in white.

ROUNDWOOD TRADE FLOWS ARE PREDOMINANTLY DEMAND-DRIVEN



Shanghai

This is the top-left panel of a four-panel aerial image showing the Huangpu River delta in Shanghai. The river is wide and light-colored, with a large, undeveloped green island in the center. The surrounding land is mostly agricultural or undeveloped.



This is the top-right panel of the four-panel aerial image. It shows the same area as the 1984 image but with significant urbanization. The river is narrower, and the central island is now densely packed with buildings and infrastructure. The surrounding land is also heavily developed.

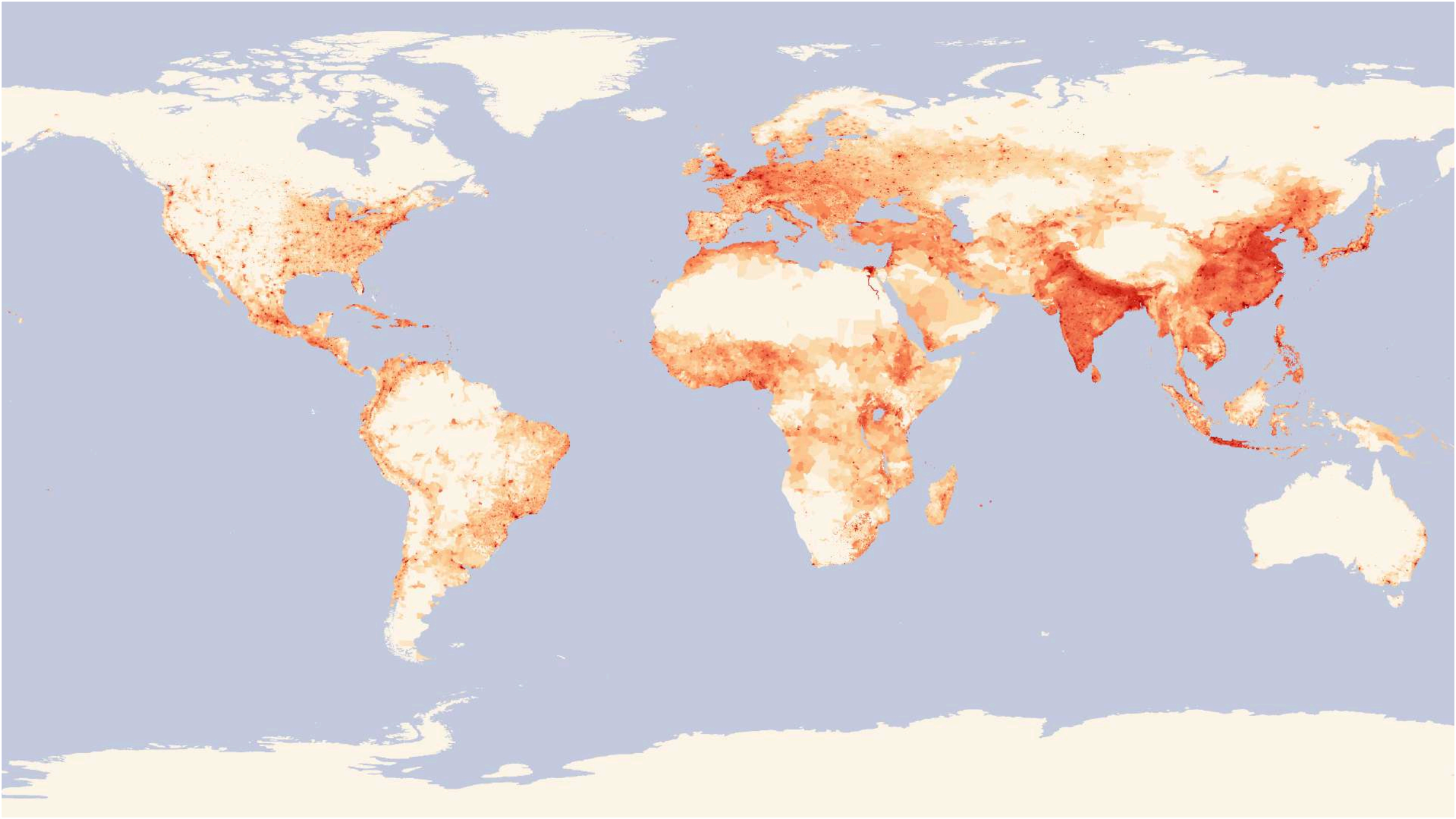
URBANIZATION IS A MAJOR DETERMINANT OF MATERIAL CONSUMPTION



1984

This is the bottom-left panel of the four-panel aerial image. It shows the same area as the 1984 image but with significant urbanization. The river is narrower, and the central island is now densely packed with buildings and infrastructure. The surrounding land is also heavily developed.

2016



—— The withdrawal of China

01 *External geopolitical shocks:* Russia's 2022 roundwood export ban, war in Ukraine, US-China trade war

02 *Domestic self-sufficiency policies* to reduce reliance on wood imports (National Reserve Forest Project)

03 *Domestic structural economic changes:* real estate crisis, increasing labor costs, pivot to tech.-intensive capital exports



Towards a potential “post-China” era in the global roundwood market

- ▶ China’s declining integration into the roundwood trade network is likely to continue
 - ▶ Necessity for major exporters to identify new, sustainable markets for timber supply (e.g., New Zealand)
 - ▶ The world is becoming increasingly fragmented and marked by policy uncertainty
-



The background of the slide is a dark, semi-transparent image of a financial trading interface. It features multiple panels: a table of market data on the left, and several line charts on the right. One chart at the top right is labeled 'EURUSD (bid), ticks, # 300 / 300'. Another chart below it is labeled 'Gold, spot - 1.276,820 - 22:00:00'. The interface includes various UI elements like search bars, alert buttons, and settings menus, all rendered in a light gray color against the dark background.

02 Recall on international wood trade data and their limits *(from last time...)*

What is the most reliable source we can have on trade?

More especially on quantities and values of commodities



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More especially on quantities and values of commodities

Customs are the most reliable source of data concerning tradable commodities.

They collect at least, for every shipment of a given commodity: **the product code, the tonnage, the value, the origin, and the destination** of the merchandise.



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A man with dark hair, wearing a black suit, white shirt, and dark tie, is looking directly at the camera. In the background, there is a blurred circular logo with the text 'L'ÉCOLE NATIONALE D'ADMINISTRATION' and a person's silhouette. A white rectangular box with a thin black border is positioned in the upper right corner, containing the text 'Time to shine!' in a bold, white, sans-serif font.

**Time to
shine!**



What are the main databases used to study the international trade of wood?

♦ **A:** World Custom Organization db.

♦ **B:** FAOSTAT Forestry database

♦ **C:** UN Comtrade database

♦ **D:** Agreste (service ministériel)

A person is seated on a stage, illuminated by blue spotlights. The background is dark with blue light beams. The person is wearing a dark suit and is gesturing with their hands.

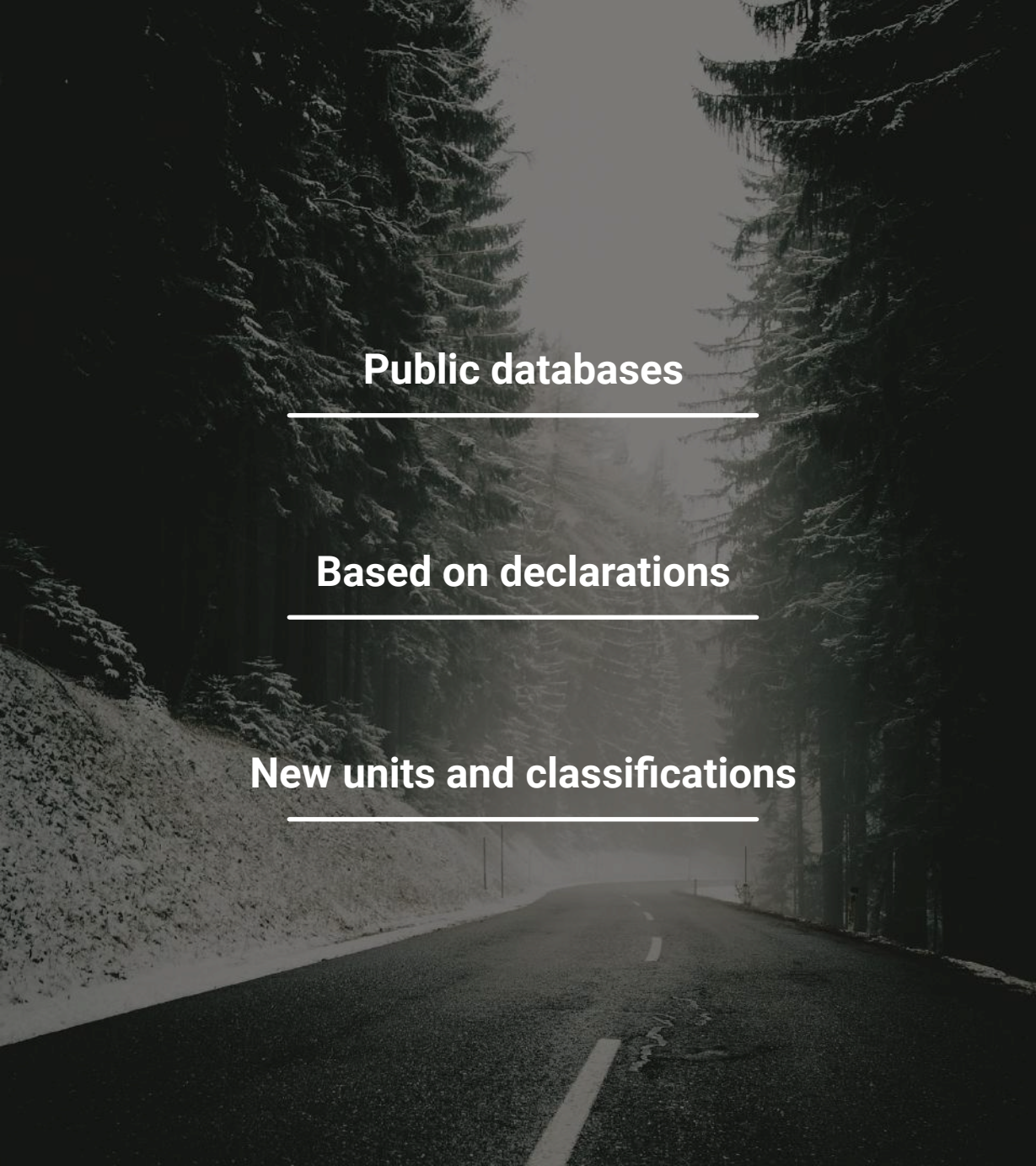
What are the main databases used to study the global trade of wood products?

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Public databases

Based on declarations

New units and classifications

INTERNATIONAL TRADE DATABASES

UN Comtrade and FAOSTAT databases

These are open databases.

They collect reports from all member countries through the Joint Forest Sector Questionnaire (JFSQ).

Each country has a national correspondent in charge of providing the data for the JFSQ.

The data must have certain units and follow a given classification (may require data conversion).

Lessons from UN and FAO's databases

A screenshot of a code editor showing JavaScript code. The code includes a function `serialize` that takes a configuration object and returns a string. It also includes a function `hex2rgb` that converts a hexadecimal color string to an RGB array. The code is written in a dark-themed editor with syntax highlighting.

Public database

UN Comtrade and FAO's database are **open** and **use their own classifications and set of units**.

They are the two more widely used databases for international wood products trade.

Conversion

Data collected by the FAO through the JFSQ has to be **converted in new units using** national or international conversion coefficients. (Ex. Of roundwood: French volume is over bark, FAO's volume is under bark!)



Declared values

Data from UN Comtrade and FAO's databases are **reported by the member countries...** that provide a financial support for the two organizations. **No audit would be performed on the quality of the reporting.**



- Some databases are based on declared values that may be incorrect.
- When using a database, you should take care of the units used and consider with precaution values in other units that results from conversion.
- Bonus: One tricky point of using international trade data is the management of null values.

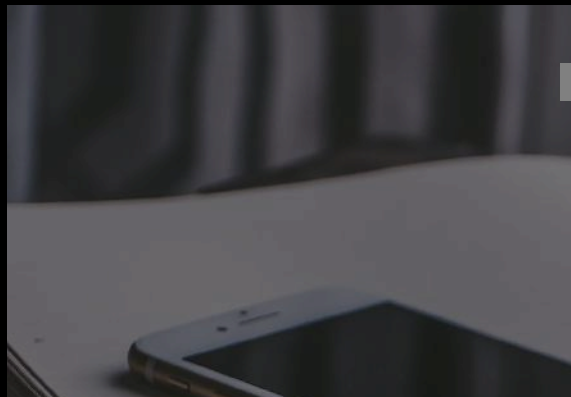


What may be the limitations of those databases?

Or why should we be careful while making the data speak?

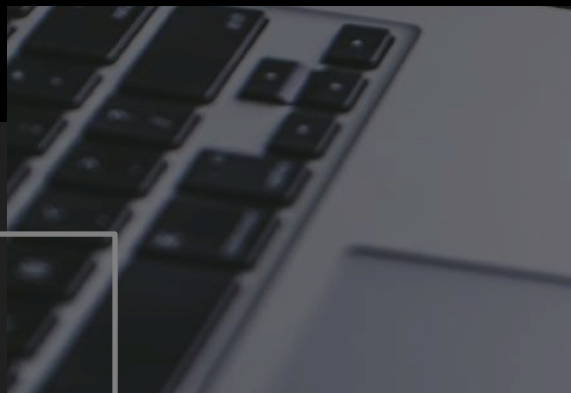
- Correspondence between different classifications used by different databases may be challenging to deal with.
- Traceability is not guaranteed.
- Amendments that aim to add corrections to classifications or a new data collect may, lead to some breaks in statistical series.
- Some measures contain uncertainties that are sometimes high and may misrepresent reality.

- Some databases are based on declared values that may be incorrect.
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What may be the limitations of those databases?

Be cautious when using trade data.

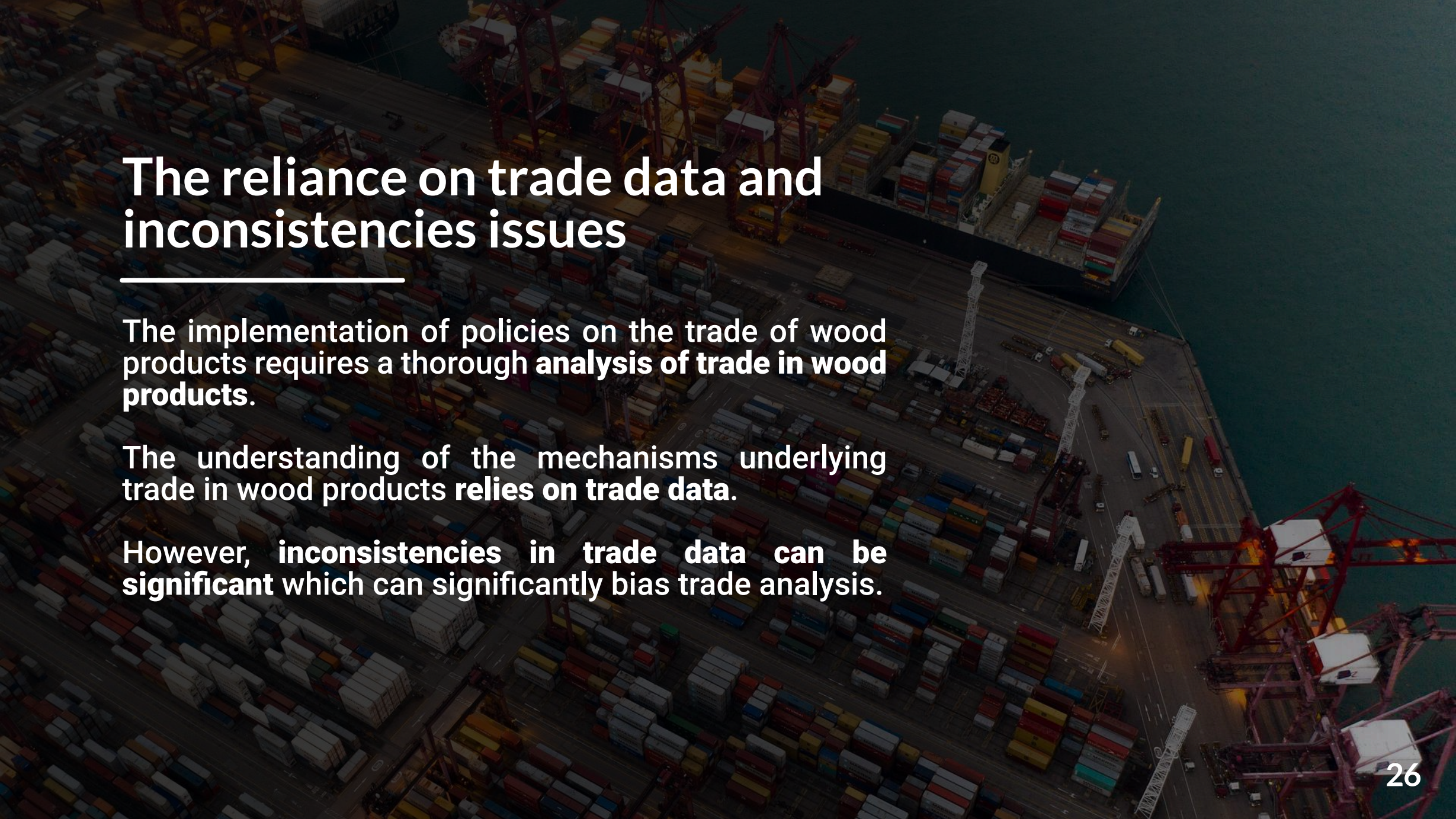


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- Some measures contain uncertainties that are sometimes high and may misrepresent reality.



03 Trade data discrepancies for wood products: characterisation, quantification, causes (and use?)



The reliance on trade data and inconsistencies issues

The implementation of policies on the trade of wood products requires a thorough **analysis of trade in wood products**.

The understanding of the mechanisms underlying trade in wood products **relies on trade data**.

However, **inconsistencies in trade data can be significant** which can significantly bias trade analysis.



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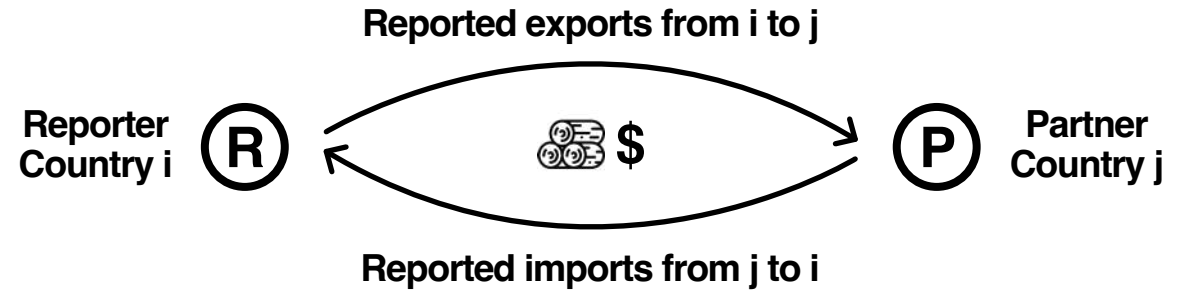
[Metadata Survey](#)

[User Guide](#)

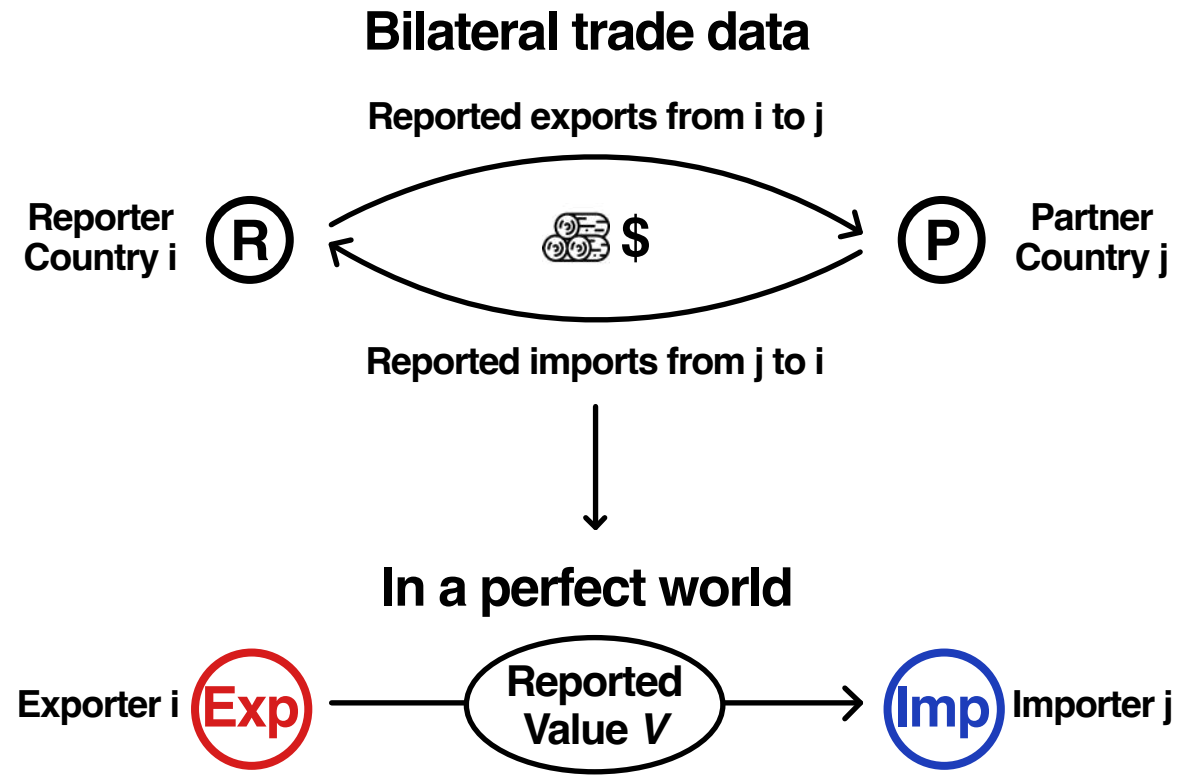
[UN Comtrade Database](#)

COMPUTING MIRROR FLOWS AND PROCESSING TRADE DATA INCONSISTENCIES

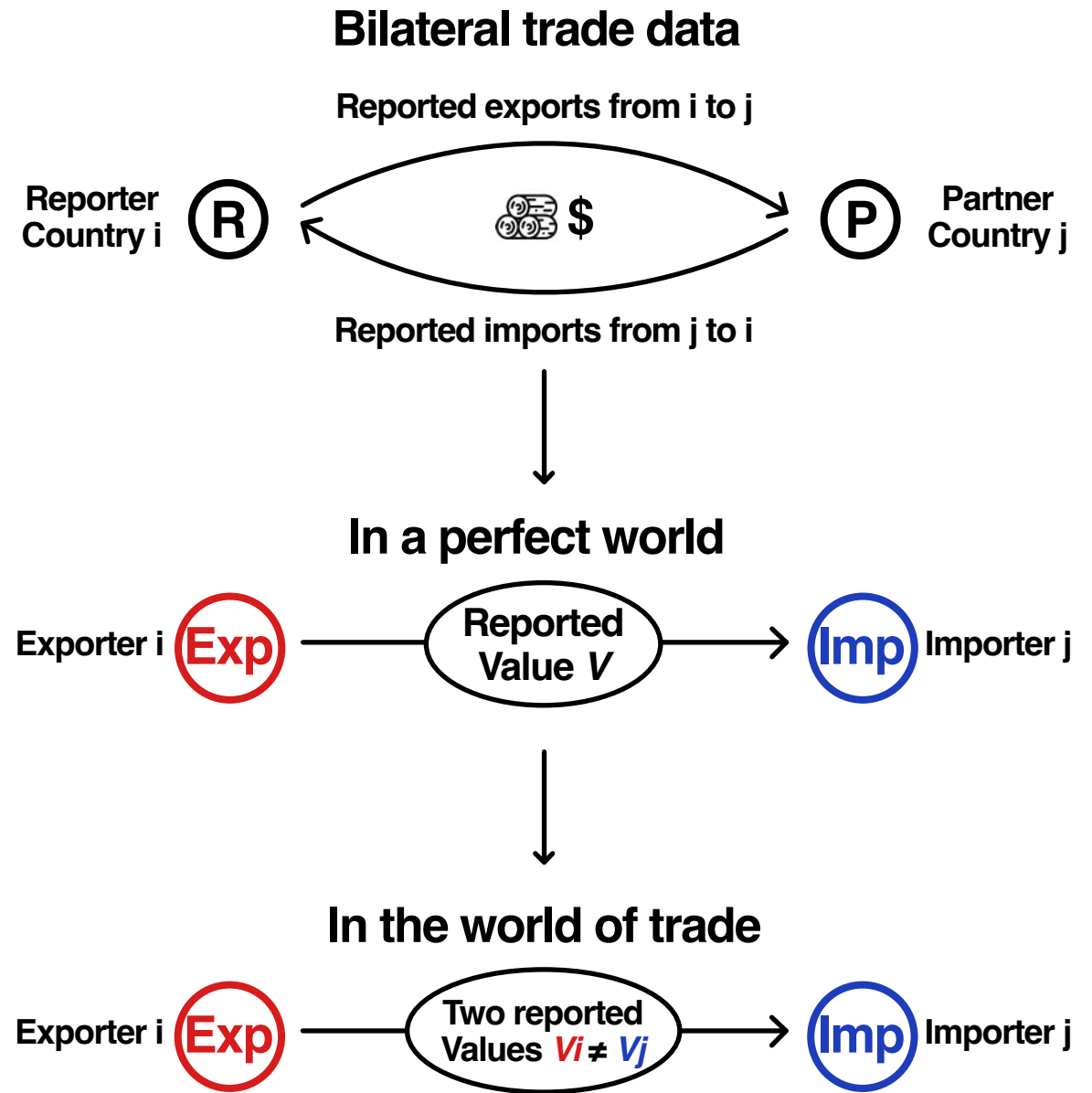
Bilateral trade data



COMPUTING MIRROR FLOWS AND PROCESSING TRADE DATA INCONSISTENCIES



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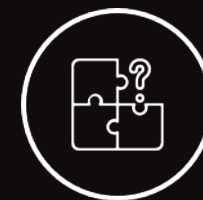




THREE TYPES OF INCONSISTENCIES



Outliers leading to statistical deviation



Missing values, mostly on weight and quantity



Bilateral asymmetries or mirror flow discrepancies



THREE TYPES OF INCONSISTENCIES



Outliers leading to statistical deviation



Missing values, mostly on weight and quantity



Bilateral asymmetries or mirror flow discrepancies

Potential sources?



Potential sources?

> *Data reporting procedures*

- Reporters may use different statistical criteria to report trade.

- Import recorded CIF, exports reported FOB.

- The definition of the trade partner may vary among countries.

- Countries do not necessarily use the same commodity classification system.



Potential sources?

> Poor data collection

- Countries may not report their foreign trade.
- Proximity with a given sector.
- Governance issues: political stability, corruption, rule of law...
- Illegal forestry and its associated trade of wood products.



DATA USED

Export and import data from the UN Comtrade database from 1993 to 2022 for:

- Product 4403 “Wood in the rough”
- Product 4407 “Sawn wood”
- Product 4408 “Veneer”

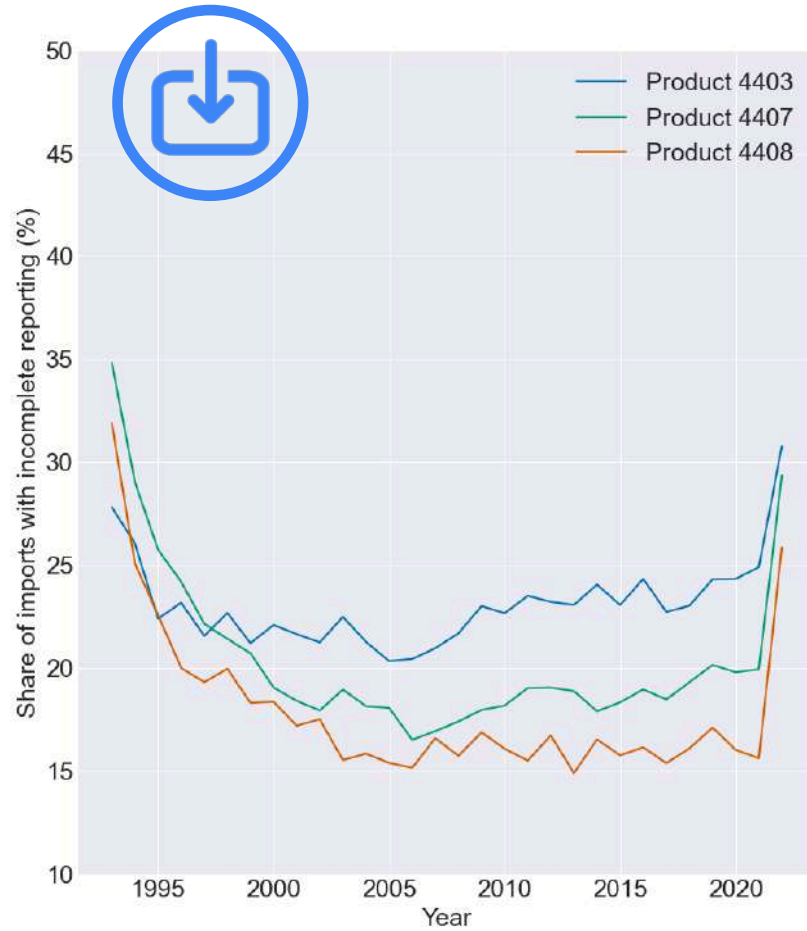
Quantification of UN Comtrade mirror flow inconsistencies



About half of trade is incompletely reported

Every wood product considered displays a share of incomplete reporting above 40% over the period. In particular, wood in the rough has the highest share (> 55%).

Quantification of UN Comtrade mirror flow inconsistencies



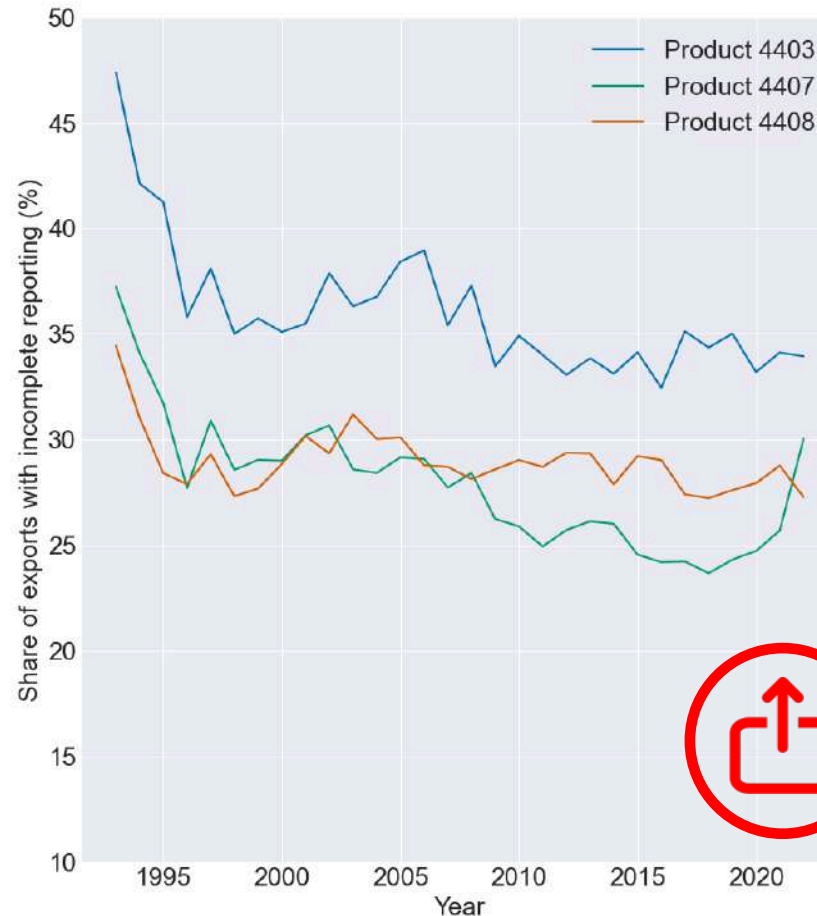
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Low share of incompletely reported imports

Imports display relatively low share of incomplete reporting, between 15 and 25%. This share decreased between 1993-2005 and has slightly risen since.

Quantification of UN Comtrade mirror flow inconsistencies



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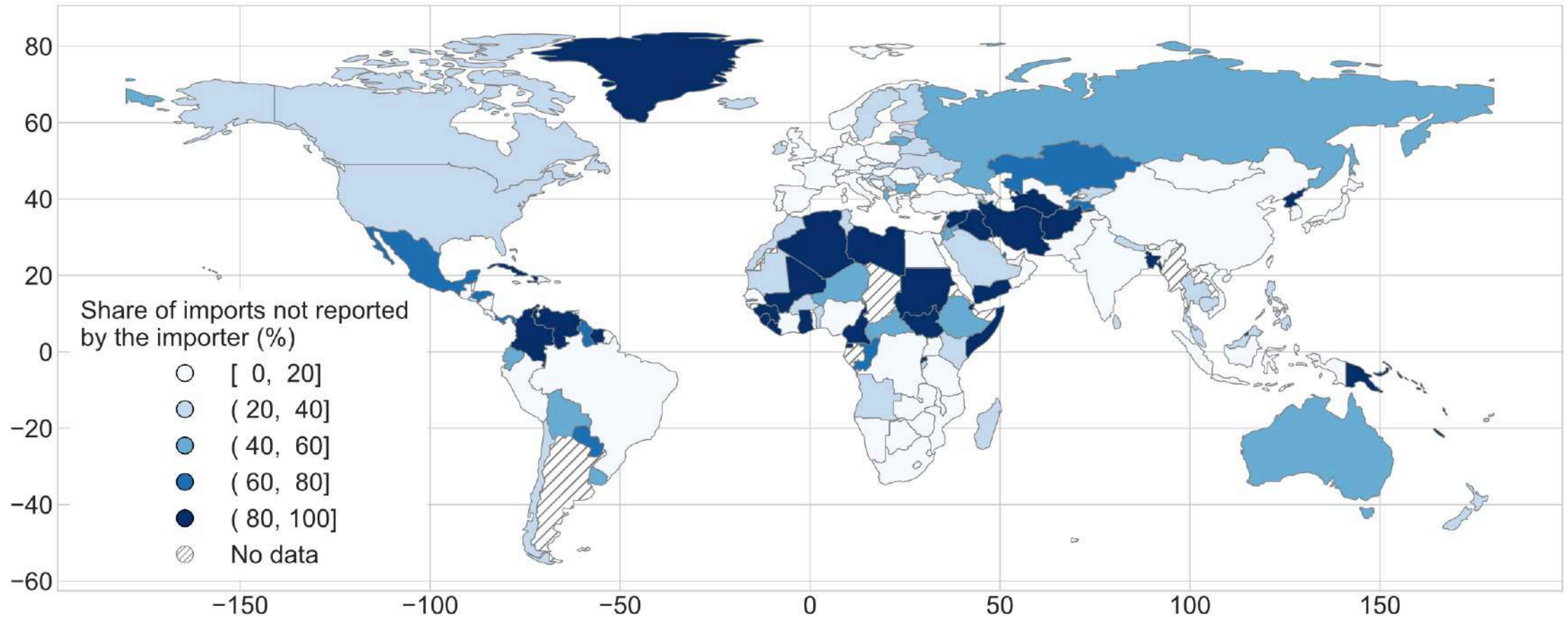
Low share of incompletely reported imports

Imports display relatively low share of incomplete reporting, between 15 and 25%. This share decreased between 1993-2005 and has slightly risen since.

Exports are often incompletely reported

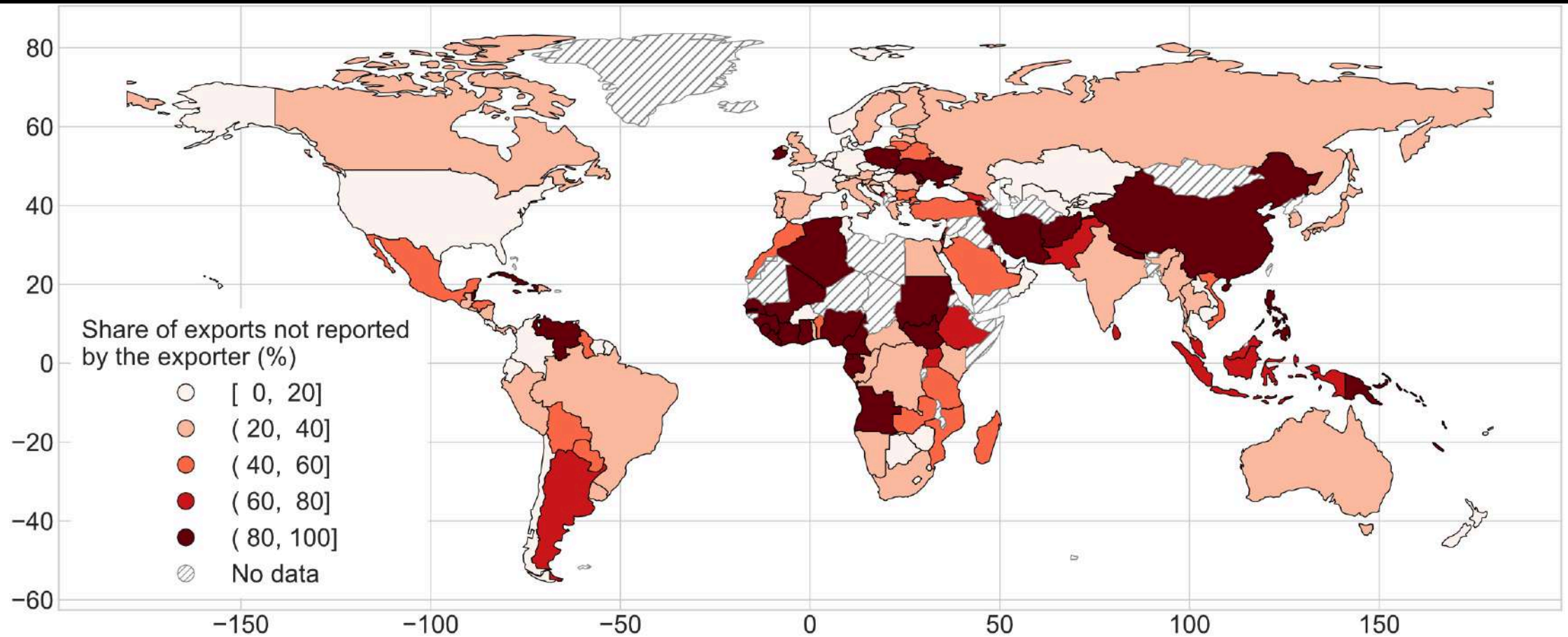
For each wood product, the share of incomplete reporting is about 10% to 15% higher for exports than for imports. This share has lightly decreased since 1993.

The share of non-reported imports and exports of wood in the rough: high variability between countries



Share of non-reported imports by country for wood in the rough in 2020.

The share of non-reported imports and exports of wood in the rough: high variability between countries



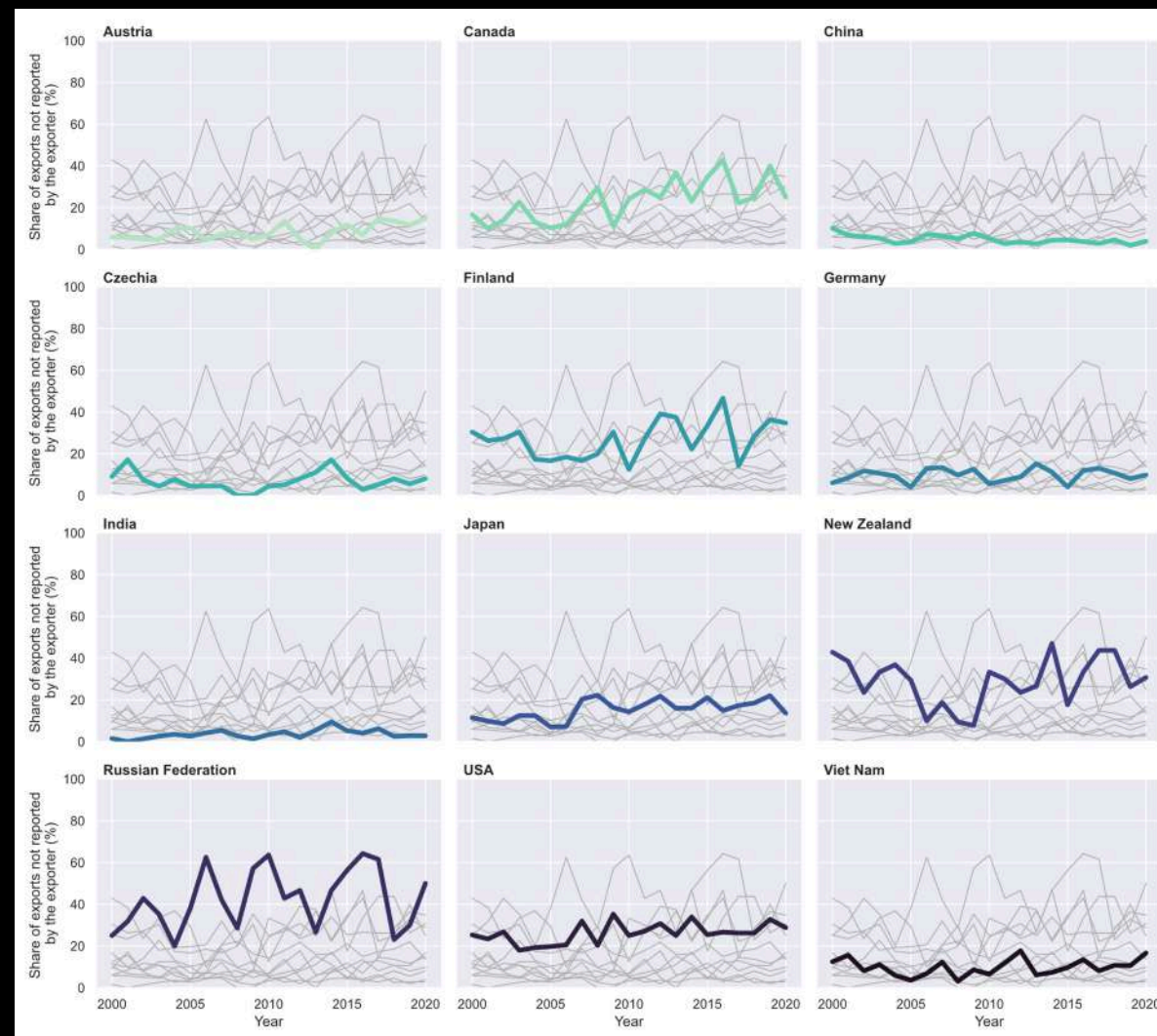
Share of non-reported exports by country for wood in the rough in 2020.

From 2000 to 2020, the share of non-reporting varied for the main importers and exporters of wood in the rough.

Countries behave differently regarding imports and exports.

For imports, Asian and European countries had a rather low share of non-reporting (<20%), the USA, Finland and New Zealand a medium share (20-40%). Russia showed the most contrasting fluctuations. Its share varied between 40 and 60% of non-reported imports.

Non-reporting over time and by country



Share of non-reported exports for wood in the rough over time, for trading countries.

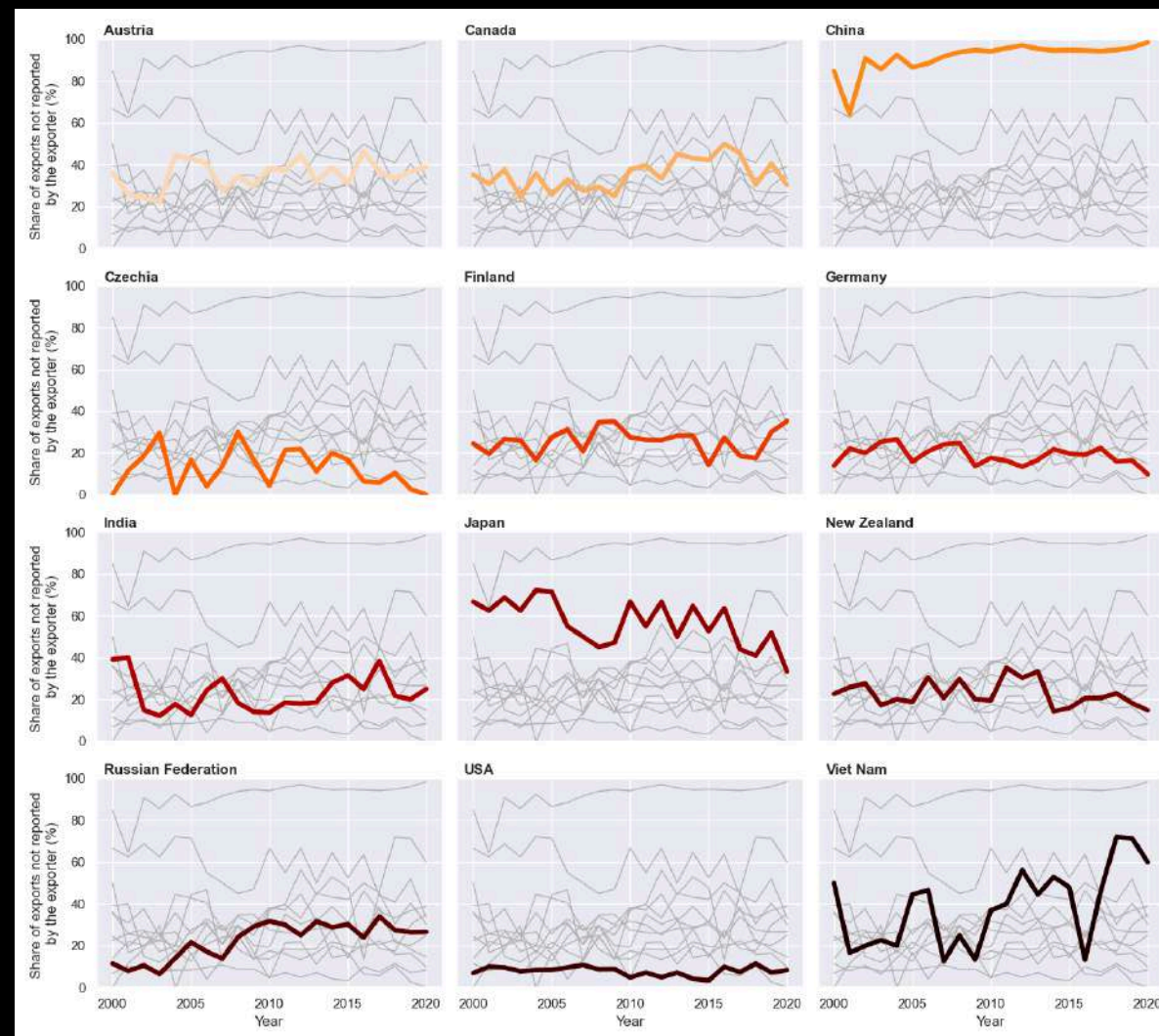
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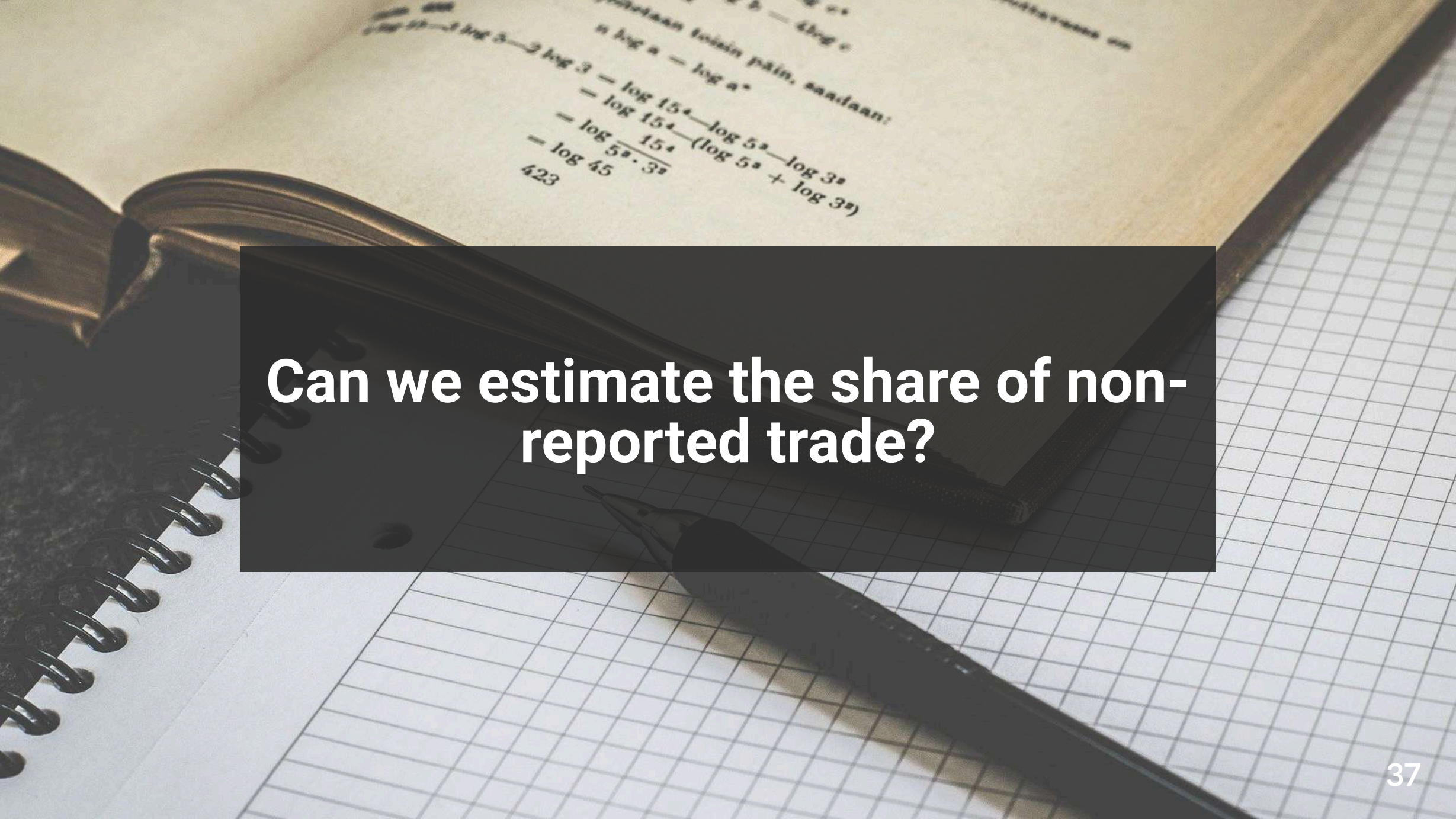
For all other countries, the share of non-reported exports was higher than the share of non-reported imports. This difference is marked for Asian countries, especially China and Vietnam. China's share of non-reported exports never fell below 80% from 2003 to 2020.

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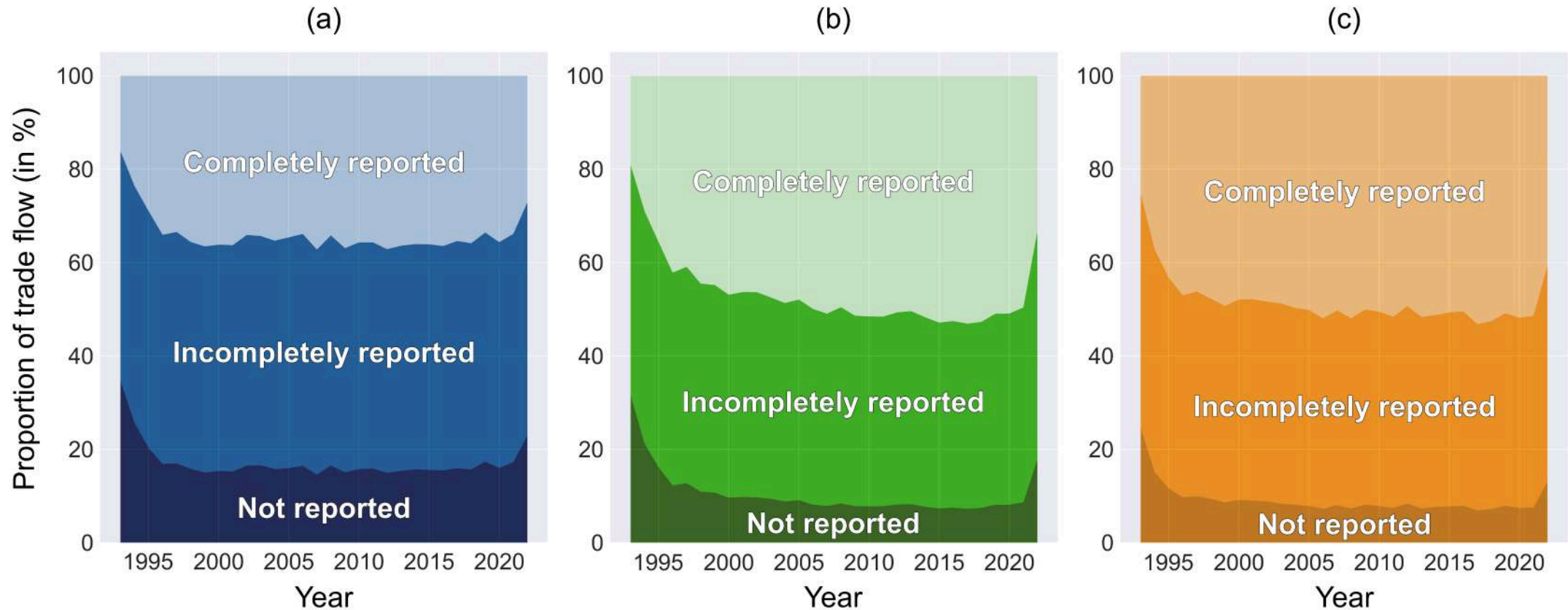


Share of non-reported exports for wood in the rough over time, for trading countries.

The background image shows an open notebook. The top page has handwritten mathematical formulas in Finnish, including $n \log a = \log a^n$ and $\log \frac{15^4}{5^2 \cdot 3^2} = \log 45$. The bottom page is a grid-lined sheet with a black pen resting on it. A dark semi-transparent rectangle is overlaid on the grid paper, containing the text.

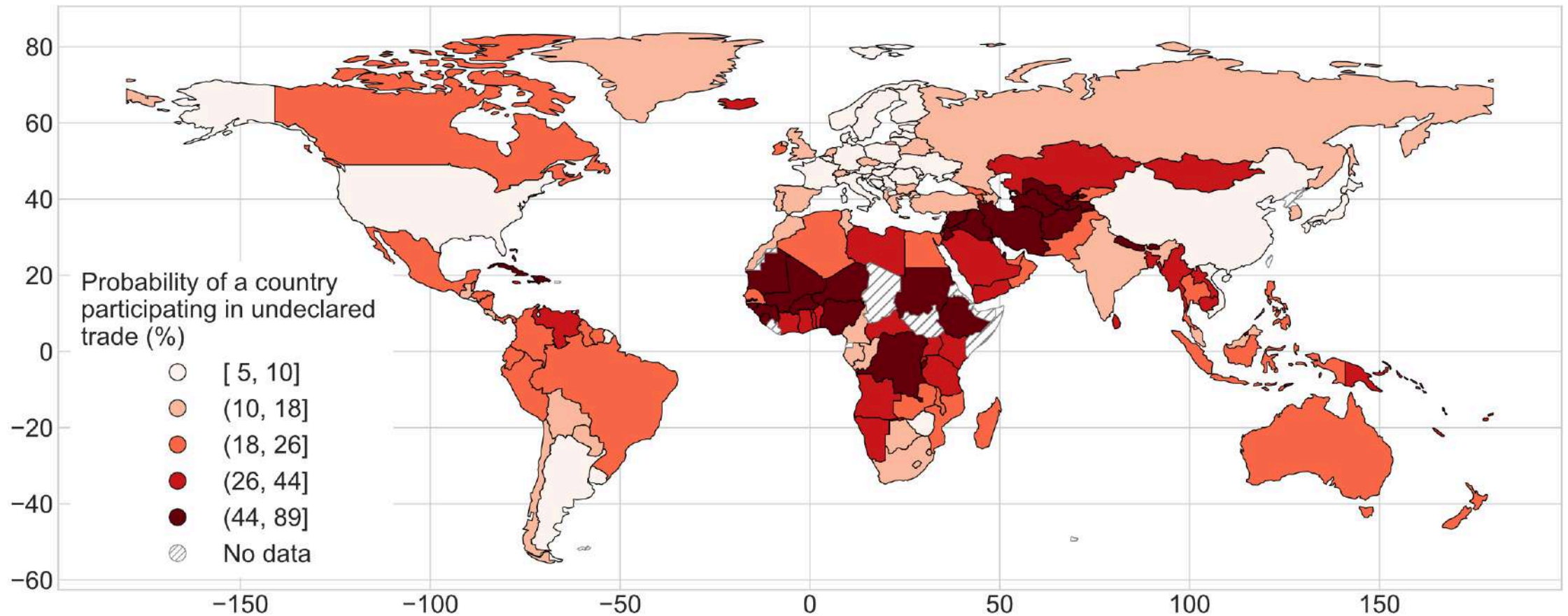
Can we estimate the share of non-reported trade?

Completely, incompletely, and not reported trade in wood products.



Estimated proportion of completely reported, incompletely reported, and non- reported trade flows over time for wood in the rough (a), sawn wood (b), and veneer (c).

Probability that a country have participated in non-reported trade



Probability that a country has participated in non-reported trade flows of wood in the rough during the study period

Thank you!

