Chapter 2
International Logistics and Supply Chain Management

International Logistics and Supply Chain Management

- Historical Development
- Logistics & Supply Chain Management
- Elements of International Logistics
- Economic Importance of International Logistics
- International Reverse Logistics

Historical Development

Until the early 1980s, international logisticians were focused on getting the goods to their destination in good condition. In the mid-1980s, the emphasis shifted toward speed (FedEx), then customer satisfaction. In the 21st Century, good management of international logistics became a strategic advantage, and GTM became the tool to manage their complexity.

The Early “Slow” Days

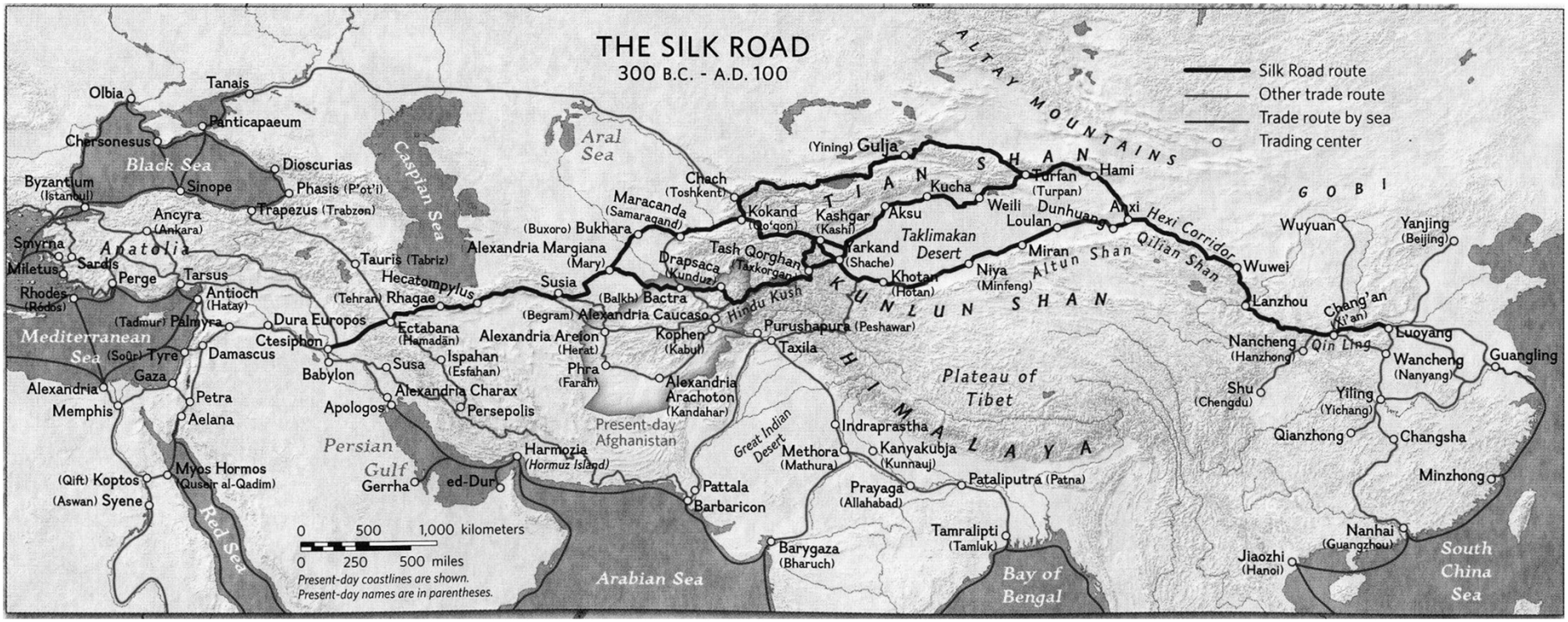
The first international logisticians were traders on the Silk Road, a well-traveled trade route, in use for over 3,000 years, stretching from Europe to Asia and passing through the Middle East.

Early modern logisticians were concerned primarily with ensuring goods arrived at their destination in good condition and at the lowest possible cost.

Following World War II, logistics began to incorporate the techniques used by the military.

Logistics began to refer to not just the movement of goods but also to sales, the procurement of supplies, and the management of supplier and customer relationships.

The Silk Road



The Silk Road between Byzantium/Istanbul, Turkey and Guangling/Yangzhou, China
Source: Fred Hiebert, Penn Museum

The Early “Slow” Days

International shipments were handled by stevedores, who did all the work by hand (1930s)
Source: Russell Lee, U.S. Farm Security Administrationc

The Move Toward Speed

- The introduction of containers (or “boxes”) in the late 1950s, and their eventual widespread adoption, made shipping much more efficient as well as cheaper and faster.

- In the 1970s, new companies, like FedEx and DHL, introduced time-defined air shipping services, and gained a large market share in domestic shipments.

- In the 1980s, international air shipments grew as costs came down and the number of destinations increased. Air transport became cost-competitive with ocean transport for many products.

The Emphasis on Customer Satisfaction

- The very high interest rates of the 1980s led companies to reduce inventory levels.

- New inventory management techniques were created to reduce inventory costs. Those techniques included:
  - Just-in-time (JIT)
  - Materials Requirement Planning (MRP)
  - Manufacturing Resources Planning (MRP II)
  - Distribution Resources Planning (DRP)

- Since these techniques relied on rapid and reliable deliveries, logistics firms provided reduced shipping times and time-defined deliveries.

Just-In-Time Techniques

- Just-in-time manufacturing is a process that plans for parts to arrive on the assembly line just before they are needed. The goal of this technique is to reduce or eliminate the need for inventory.

- It now includes the delivery of parts to the assembly plant just before they are needed, and the delivery of finished goods just as the retail store is running out.

- JIT has become part of standard operations management practices in most manufacturing facilities.

- JIT involves a risk if the supply chain is disrupted as production may have to shut down due to lack of materials.

Computer-Based Tools

- Materials Requirement Planning (MRP) and Manufacturing Resources Planning (MRP II) are tools that allow manufacturing firms to determine what to produce (or order from suppliers), and in which quantity, in function of their sales forecasts and pending customer orders.

- Distribution Resources Planning (DRP) is a tool that allows a retail firm to determine what to order from its suppliers, in which quantity, and when, in function of what it sells to retail customers.

- These tools are dependent on the reliable, efficient delivery of relatively small shipments.

The Transformation into a Strategic Advantage

- International Logistics management has become a strategic advantage for the firms that are capable of:

  - Containing the costs of shipping, in view of increased fuel costs
  - Providing “visibility” in the supply chain, or the ability to determine where a particular shipment is located, at any time
  - Providing reliable, dependable deliveries
  - Ensuring the security of the goods while they are in transit
  - Engaging in sustainable practices

Current Status: Global Trade Management

GTM software is a complex system that helps companies organize their international-trade operations by:

- Monitoring compliance with export and import rules
- Offering visibility of goods, by identifying where they are in the shipping process
- Allowing traceability of the origin of goods
- Accumulating information, eventually leading to optimization of shipping choices

Blockchain and Distributed Ledger

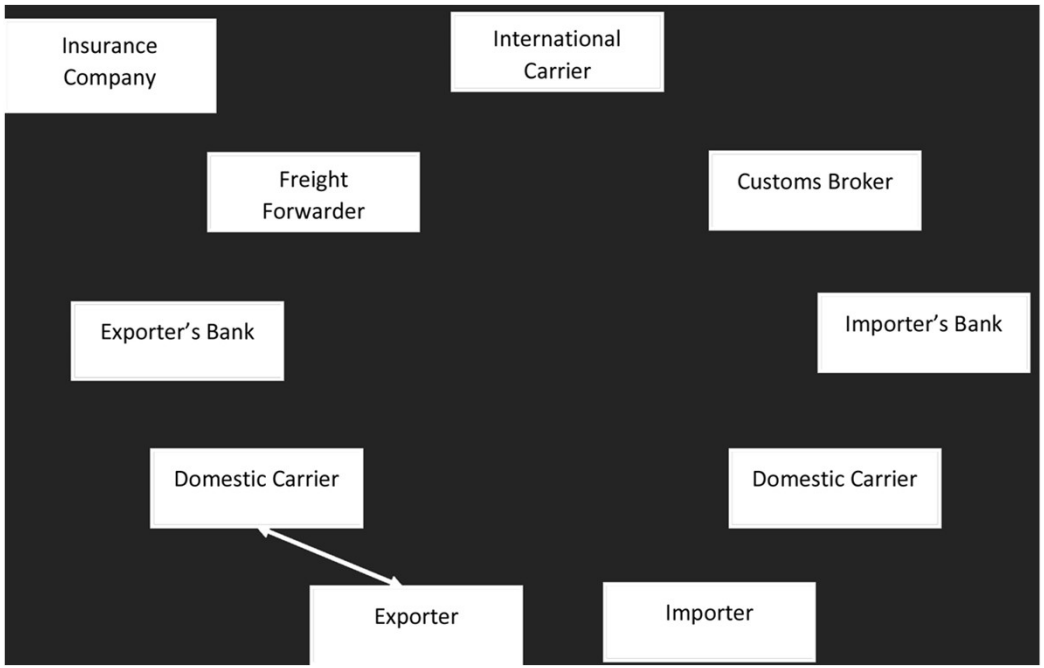
A tool that increases visibility in the supply chain is the Distributed Ledger.

Distributed ledgers were essential to the creation of Bitcoin, a crypto-currency that uses this system as well as a blockchain to function.

Distributed ledgers allow parties that are not part to a transaction to see the information that is relevant to them.

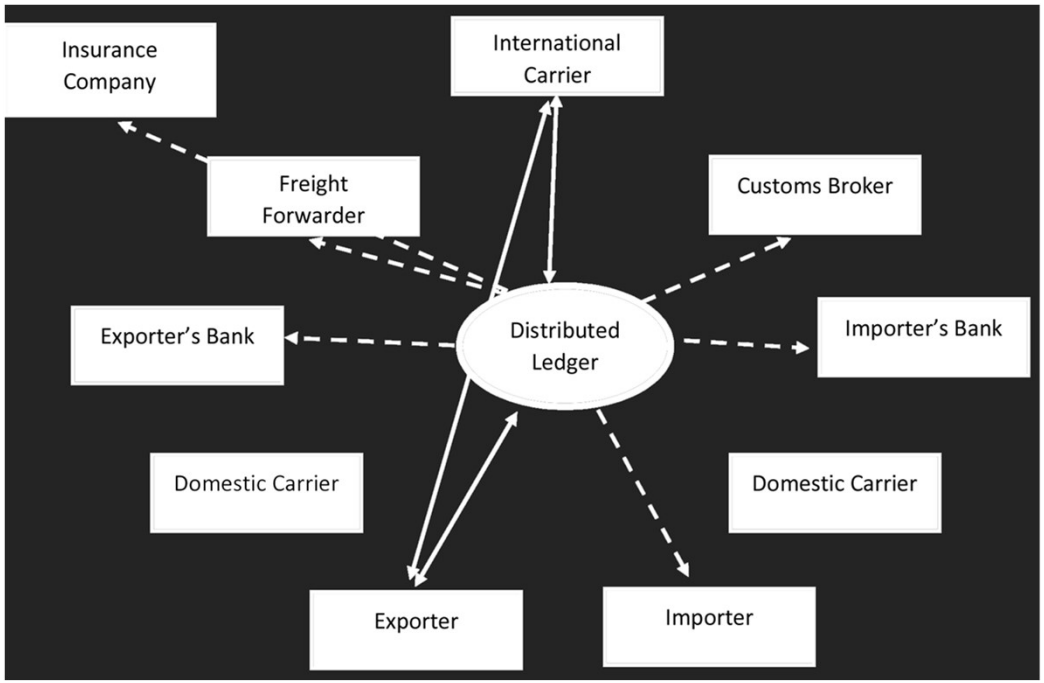
The next two slides explain the differences between the way a transaction is recorded in a traditional ledger and the way it is recorded in a distributed ledger.

Traditional Record Keeping



A transaction between the exporter and the first carrier is only recorded once, by each party.

Distributed Ledger Record Keeping



A transaction between the exporter and the international carrier is recorded by each party, and on the distributed ledger, granting other parties access to relevant information.

Definition of Logistics

"Logistics is the part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements."

Source: Council of Supply Chain Management Professionals

Definition of Supply Chain Management

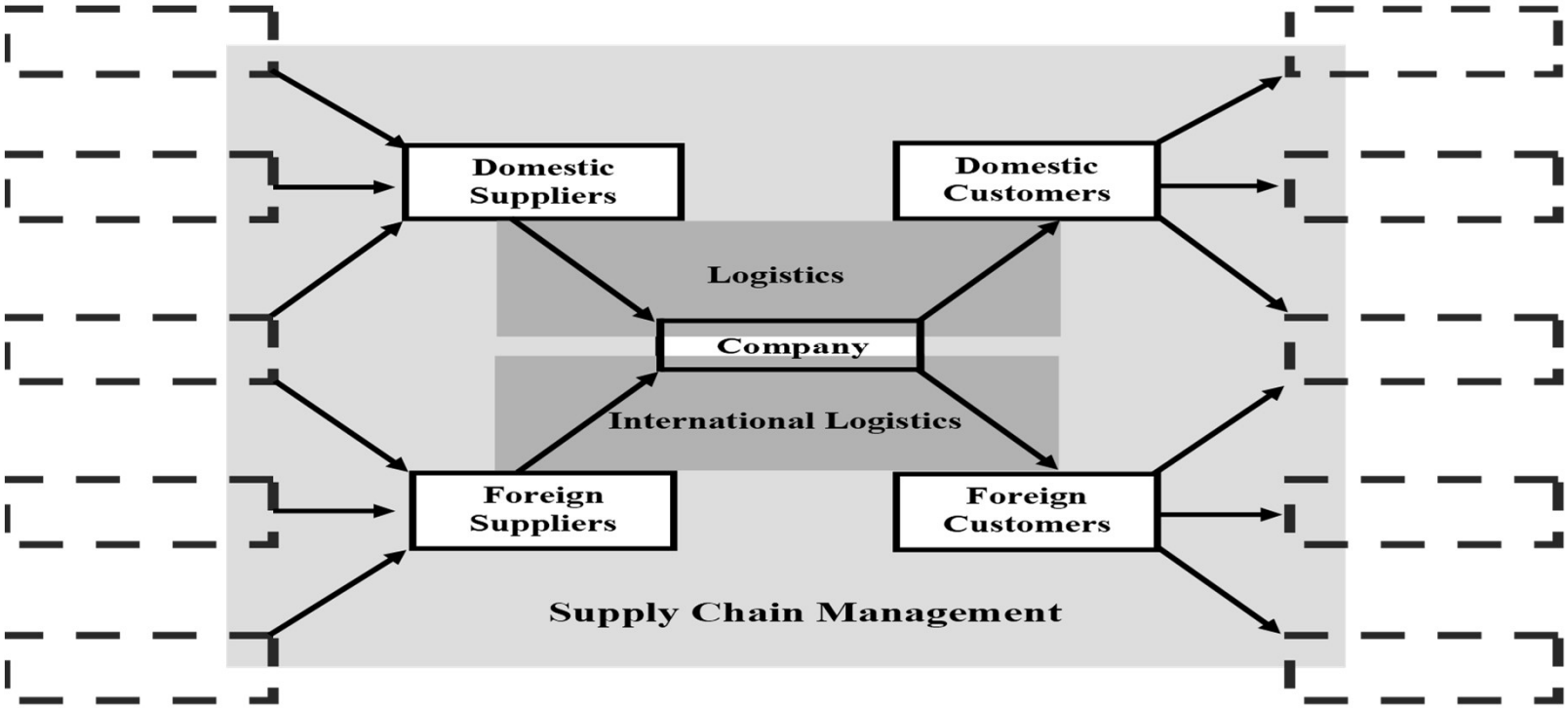
“Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies.”

Source: Council of Supply Chain Management Professionals

The Evolution of Logistics and Supply Chain Management

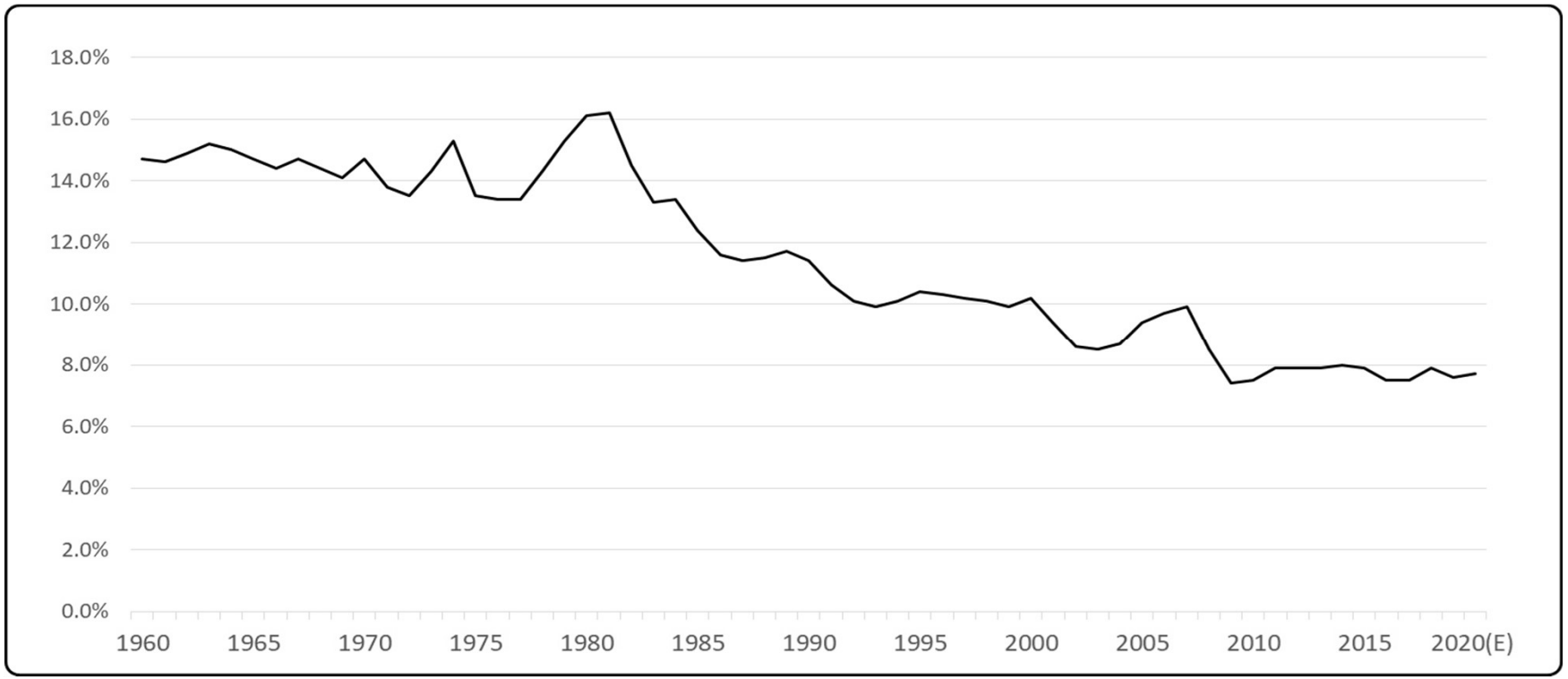
The Evolution of the Concepts of Logistics and Supply Chain Management
Source: Alfred Battaglia

International Logistics and SCM



Logistics, International Logistics, and Supply Chain Management

Importance of Logistics in the U.S.



Logistics Costs as a Percentage of GDP in the United States
Source: State of Logistics Annual Reports 1990-2020, A.T. Kearney

Elements of International Logistics (I)

- The environment in which international logisticians operate is quite different from the domestic environment.
- The decisions regarding international transportation are much more complicated than those regarding domestic transportation.
- The number of intermediaries involved in an international transaction is greater than in a domestic transaction.

Elements of International Logistics (II)

- The inherent risks and hazards of international transportation are much greater.
- International insurance is much more complex.
- .International means of payment are more complicated.
- Terms of trade are more challenging.

Elements of International Logistics (III)

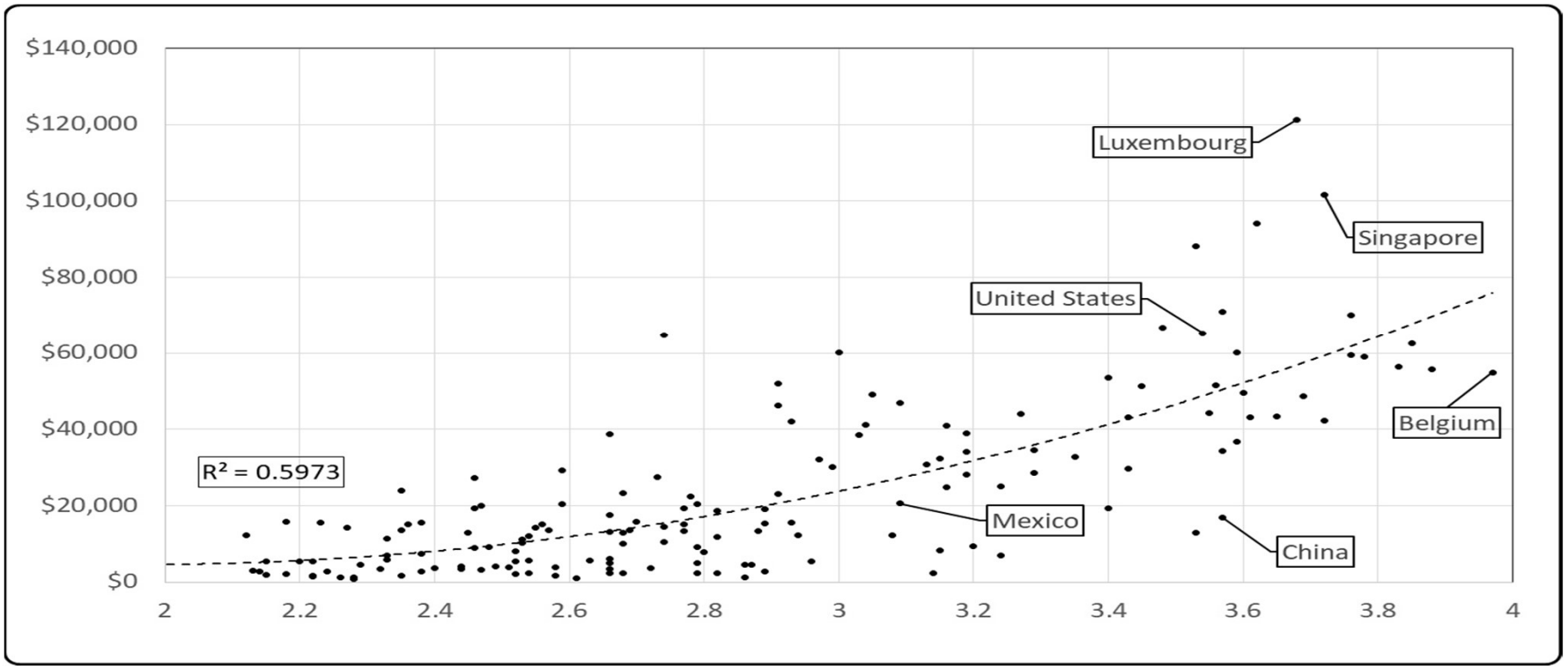
- The crossing of borders represents specific challenges in documentation and requirements.
- Warehousing decisions involve more variables.
- The transportation of dangerous goods under multiple regulatory environments is far more challenging.
- The transportation of refrigerated goods over long distances involves more careful planning.

International Logistics

- Worldwide, logistics activities represent about $10 trillion worth of activities (estimated, 2020)
- That represents about 11 percent of all worldwide production

- International-logistics activities represent about $2.7 trillion (estimated, 2020)
- That represents about 15 percent of all international trade

Logistics Performance Index



Logistics Performance Index and GDP *per capita*
Source: World Bank

Reverse International Logistics

Logistics activities can also take place in “reverse” when the goods move from the consumer back to the manufacturer. This takes place when:

- The goods have completed their useful like and are returned to be remanufactured or refurbished
- The goods need to be repaired
- The goods are defective and were recalled by the manufacturer
- The packaging can be returned to be reused for another shipment

An example would be toner cartridges for printers are returned to be refilled.