



HOT TOPIC ACTIVITY

Supply Chain Disruptions: What They Are and Why They Matter

Objectives

Students will:

- Create process diagrams with nodes and links
- Identify steps in a supply chain for a specific product
- Predict consequences of supply chain disruptions
- Explain how businesses can navigate some of the risks associated with supply chain disruptions through futures contracts

GRADE RANGE

9–12

DURATION

2–3 class periods

OVERVIEW

In this lesson, students explore supply chains and what happens when they are interrupted. The activity begins with students drawing the steps they would take to make toast. This introduces students to how processes can be portrayed visually. Students then work in groups to brainstorm the ingredients needed to make a favorite fast-food meal. Group members research the steps to bring specific ingredients from their raw forms to the restaurant. After each member draws a supply chain for one ingredient, they compare their results and discuss what the overall supply chain might look like for the restaurant. Students watch a video on the impacts of the global pandemic on supply chains and apply what they learned to other scenarios that could impact supply chains. Students then learn that one way to navigate the risk of price fluctuations for supplies is to purchase futures contracts. The lesson concludes with students making connections between supply chains and their original toast drawings and submitting an exit ticket with things they learned and questions they still have.

BACKGROUND

From empty shelves at the grocery store to rising prices of certain items, the COVID-19 pandemic shined a light on the importance of supply chains and what happens when they are disrupted. Interruptions to supply chains, however, are not a new phenomenon.

They can occur as a result of natural disasters, work stoppages, and more. No matter the cause, the result of decreased supplies is generally the same—higher prices and, as we saw during the COVID-19 pandemic, exceptionally higher demand for certain supplies. In this lesson, students explore what supply chains are, why they are important, and the impact of various supply chain disruptions.

STANDARDS CORRELATION

Voluntary National Content Standards in Economics, Council for Economic Education

Standard 1: Scarcity

- 1: Choices made by individuals, firms, or government officials are constrained by the resources to which they have access.
- 2: Choices made by individuals, firms, or government officials often have long-run unintended consequences that can partially or entirely offset or supplement the initial effects of the decision.

Standard 2: Decision Making

- 6: Some decisions involve taking risks in that either the benefits or the costs could be uncertain. Risk taking carries a cost. When risk is present, the costs should be treated as higher than when risk is not present.

Standard 7: Markets and Prices

- 1: Market outcomes depend on the resources available to buyers and sellers, and on government policies.
- 2: A shortage occurs when buyers want to purchase more than producers want to sell at the prevailing price.
- 4: Shortages of a product usually result in price increases in a market economy; surpluses usually result in price decreases.

Standard 8: Role of Prices

- 2: Supply of a product changes when there are changes in either the prices of the productive resources used to make the product, the technology used to make the product, the profit opportunities available to producers from selling other products, or the number of sellers in a market.
- 3: Changes in supply or demand cause relative prices to change; in turn, buyers and sellers adjust their purchase and sales decisions.

National Standards for Personal Financial Education, Council for Economic Education and Jump\$tart Coalition for Personal Financial Literacy

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Note: Correlations to additional national standards, including C3 Framework for Social Studies State Standards, National Standards for Family and Consumer Sciences Education, National Standards for Business Education, and Common Career Technical Core, can be found [here](#).

MATERIALS

- **Blank sheets of copy paper**—one per student
- **Markers**—one per student (optional)
- **What Does it Take? Student Capture Sheet**—one copy per student
- **Say it in Six Student Capture Sheet**—one copy per student
- **Weakest Link Student Capture Sheet**—one copy per student
- **Aha! Huh? Times Two Student Capture Sheet**—one copy per student
- **Weakest Link Scenarios Visuals**—one copy each to display around the room
- **Tape**—enough to hang visuals
- Videos to play during the activity:
 - [The Impact of Supply Chain Disruption](#)
 - [Supply and Demand](#)
 - [Futures and Options](#)

ESSENTIAL QUESTION

What are supply chains and what risks do they present for businesses?

TEACHER PREPARATION

This lesson begins with students drawing the process of making toast. While this might seem a bit arbitrary, it is based on the work of Tom Wujak. In a TED talk on the topic, Wujack explains how this process is used to get people and teams thinking in terms of a system model. In turn, they are able to tackle more complex problems. If desired, watch the TED talk before facilitating this lesson to see examples of toast drawings and the individual and group process. A gallery of example drawings are also available on Wujak's [website](#).

When preparing for this activity, consider creating your own exemplars of each of the student capture sheets. Preparing these can help you anticipate what additional support students may need and provide appropriate scaffolding. You can also choose to share your own as examples during the activity.

- **What Does it Take? Student Capture Sheet:** Select an ingredient from a favorite menu item. Consider the questions on the capture sheet and create your own supply chain. Take care to create an example that is similar to what you would expect of your students. Avoid being overly complex or intricate in your drawing.

- **Say it in Six Student Capture Sheet:** Create your own summary using exactly six words. Remember that you are summarizing the impacts of the global pandemic on supply chains. Use the video for inspiration, but you are not summarizing the video.

PROCEDURE

ENGAGE

- Begin by asking students to raise their hands if they ate breakfast today. Call on volunteers and ask what they ate for breakfast. If none mention it, ask if any students had toast this morning. If not, ask students how long it has been since they ate toast.
- Confirm that all students are familiar with making toast and/or have seen someone make toast before.
- Distribute a blank sheet of paper to each student. If possible, provide a marker to each student. If markers are not available, students can use a pen or pencil.
- Inform students that you are going to set a timer for three minutes. During this time you want them to draw the process of making toast. Ask them to assume they are drawing this for someone who has never made toast and doesn't speak the same language. As such, their drawing cannot include words. Direct students to focus only on their own sheet of paper and drawing.
- Set the timer for three minutes, and allow students time to draw. If students finish early, encourage them to flip their paper over so others cannot see their drawing.
- Once time has ended, ask for volunteers to share their drawings. Comment on what is shown on the drawing and invite students to look for what the drawings have in common and what sets them apart. Prompt discussion with questions, such as:
 - How many of you included a toaster in the drawing?
 - Did anyone show a loaf of bread?
 - How far back in the process did you begin? Did anyone start at the grocery store? How about the farm?
- Point out that some or many of the drawings include nodes (specific steps in the process) and links (what connects one step to the next).
- Share with students that drawing a process—even something as simple as making toast—usually involves these nodes and links.

LEARN

- Inform students that you want them to create new drawings for a different process. In this case, they will be drawing supply chains which represent the process of bringing food from its original raw ingredients to the consumer.
- Divide students into small groups and ask them to select a meal they might order at a fast-food restaurant. Examples include: a burrito or burrito bowl with chips and a drink; burger or chicken sandwich with fries; a sub, hoagie, or wrap with chips; or a salad with various toppings.
- Challenge students to create a list of ingredients for the meal they selected. If needed, prompt them with the questions below.
 - From what restaurant(s) might you order the meal?

- What sides, if any, will be ordered?
- What condiments will you request (for example, ketchup, dressing, or a dipping sauce)?
- What will you order to drink?
- Within their groups, direct each student to identify a unique ingredient from their list.
- Let students know that you want them to create a visual representation of part of the restaurant's supply chain. To do so, they will each select one of the ingredients from the list. Then, they should create individual drawings representing the process that takes place to get the ingredient from its original state to the restaurant. Remind students to think about both the nodes and the links in the process; similar to what they looked at before with the toast drawings.
- Distribute a copy of the **What Does it Take? Student Capture Sheet** to each student. Point out the questions and encourage students to research their selected ingredients before they start drawing.
- Allow students time to draw. Remind students that you are not looking for elaborate pieces of art; stickfigure-style drawings are perfectly acceptable. Also, unlike the toast drawing, students may use words to label nodes and/or links in their drawings.
- Direct students to share their drawings with the other members of their group.
 - What do they notice?
 - What do the drawings have in common?
 - What is unique to specific ingredients?
- Ask each group to share one or two of its drawings and the highlights of their conversation. As students share, point out the terms that could apply to various components of their drawings.
 - Producer: This is the farm or other location where the raw ingredient is grown or originates.
 - Processor: During this step, the plant or animal is converted into its edible form. This might include sorting, cleaning, butchering, etc. It usually includes packaging the items as well.
 - Distributor: Many restaurants purchase food and other supplies from a distributor. Instead of going directly to the farmer or vendor, they work with distributors to place orders and have them delivered.
 - Logistics and Transportation: Getting resources from one step to the other in the process is an important piece in the supply chain. Some foods, for example, are only grown in distant locations. Others are produced for a lower cost in other locations. In both situations, food must be transported. This can be done by land, sea, or air. Logistics and transportation are critical between each component of the supply chain.
 - Retail: The restaurant is considered the retail component of the supply chain in these examples. This is where the consumer goes to get the product—the final menu item(s). Retailers must also monitor their inventories to know how much of a product they have and how much more they will need. This often requires forecasting demand for the items.
 - Consumer: When the consumer receives the product, the supply chain ends.

- Challenge students to think about what it would look like if each group connected their individual drawings into a much larger one in order to depict the restaurant’s comprehensive supply chain. How would it differ from the original drawings? Explain to students that while some supply chains may be very simple and “chain-like,” the supply chains of most restaurants and many other businesses are actually much more complex. When shown visually, they often look more like a web or network instead of one chain.
- Let students know that while these complex supply chains may look more like a web than a chain, the phrase “you’re only as strong as your weakest link” still holds true.
- Play the video **The Impact of Supply Chain Disruption**
- Ask students what elements of the supply chains they discussed earlier were addressed in the video.
- Reinforce that the global pandemic caused severe and long-lasting problems for many businesses and their supply chains. This caused significant challenges for both businesses and consumers.
- Ask students if they recall what happened to the price of many items when supply chains were disrupted? In most cases, prices increased. Challenge students to explain why this happened.
- Play the [Supply and Demand](#) video from Futures Fundamentals to reinforce student understanding that when supply is limited or decreases, prices increase.
- Distribute a copy of the **Say it in Six Student Capture Sheet** to each student. Challenge students to summarize these impacts by creating a “six word story.” They should use exactly six words to tell what happened.
- Invite students to read their stories. If you wrote your own, share it with students.
- Let students know that supply chains experience disruptions on a regular basis for many reasons. While these interruptions may not be as significant or widespread as the recent global pandemic, each presents a risk for businesses and can impact consumers.
- Inform students that they will work in small groups to consider other sources of supply chain disruptions.
- Ask student volunteers to hang each of the **Weakest Link Scenarios** around the room.
- Explain to students that each scenario represents a “station” they will visit with the same groups they worked with previously to draw supply chains. They will begin at one station and consider how the scenario might impact the supply chain of the restaurant they considered earlier. When time is called, they will move on to the next scenario.
- Distribute a copy of the **Weakest Link Student Capture Sheet** to each student. Direct students to consider the questions as they visit each station and use the sheets to capture their notes.
- Let students know that each group will consider one or more of the situations. Explain that they should consider the questions and be prepared to share their responses with the class. Randomly assign each group to a starting scenario. If needed, more than one group can start at the same station.
- Provide time for students to read and discuss the situation. Announce when it is time for students to move to the next station and indicate the direction in which groups should rotate. Note: The number of stations each group visits will depend on how much time you allow and the extent of student conversations.

- Invite students to share the results of their conversations.
- Ask students if they think business supply chains face more or less risks than in the past. Point out changes in weather patterns and natural disasters and the global nature of production.
- Share with students that businesses should consider ways to address and/or minimize these risks. This might include having alternative suppliers or maintaining sufficient inventories of key items.
- Ask if students are familiar with futures. Share that futures are another method that businesses can use to navigate risks.
- Play the [Futures and Options](#) video from Futures Fundamentals.
- Direct students to consider which of the supply chain disruption scenarios they discussed earlier could have been less impactful on a business had they used a futures contract to lock in prices. (Answer: Scenario 3. Futures contracts can protect businesses from the risk of rising costs when crop production is at risk from drought.)

REFLECT

- Remind students that they began the lesson by drawing toast.
- Challenge students to make connections between making toast and complex business supply chains. For example:
 - How are the two similar? Different?
 - What could disrupt the process of making toast?
 - What could a person do to prevent challenges when making toast?
- Direct students to complete the **Aha! Huh? Student Capture Sheet** as an exit ticket.

EXTEND

- **Major Events:** The scenarios in the activity are general, but many are similar to actual events that have taken place. Direct students to research natural disasters and other events that are similar to those in the activity. Invite students to share the results of their research and discuss the potential likelihood of similar events taking place again.
- **More about Futures:** Invite students to explore fluctuations in commodity prices. The Federal Reserve Bank of St. Louis' economic data website, [FRED](#), includes information about commodity prices. Students can view and manipulate graphs and download data for various commodities, including corn, barley, aluminum, crude oil, and jet fuel. Direct small groups of students to select a commodity to further explore. Students should identify a period in which the price of the commodity increased or decreased. Challenge students to research the factors that may have led to the price fluctuation they identified.
- **Lessons Learned:** The COVID-19 pandemic has had substantial and long-lasting impacts for businesses across many industries and sectors. Challenge students to research how businesses have responded in order to decrease their potential risks in the future.

WHAT DOES IT TAKE?

Directions: Thinking about a specific ingredient from your group’s meal, draw the process that takes place to get the ingredient to the restaurant and into the meal. Consider the following:

- Where is this ingredient typically grown or found?
- What must happen to get the raw ingredient into the form used by the restaurant?
For example, wheat must be ground into flour, vegetables are usually sorted and cleaned, animals are butchered.
- Who does the restaurant order the ingredient from?
- What packaging usually takes place?
- How is the item transported?



Directions: Summarize the impact of the global pandemic on business supply chains. Use exactly six words. Punctuation may be used and does not count as a word.

WEAKEST LINK

Directions: Consider scenarios that might impact a business's supply chain and answer the questions.

	Scenarios		
	# ____	# ____	# ____
What portion(s) of the supply chain would this impact?			
How could the business respond to this situation?			
How might this event impact the business's customers?			

AHA! HUH? TIMES TWO

Directions: Reflect on the lesson about supply chains. What are two things that you learned or that struck you as important in the lesson (your “aha” moments)? What two questions do you still have about the topic, (things you might say “huh” about)?

	#1	#2
Aha!		
Huh?		

**A forest fire spreads
and destroys a
warehouse for one of
your key suppliers.**

Employees at a packaging plant go on strike. They are demanding improvements in working conditions before returning to work.

A major drought is impacting crops. Farmers are not producing as much of a key ingredient as they usually do.

A hurricane has left an entire region without power. Suppliers who count on the region are not sure when they will be back in business.

Unemployment is at an all-time low in your state. Your business is having a hard time getting enough people to fully staff the operation.

A tsunami in another country has interrupted production of a key ingredient.

Winter weather has closed interstates in your area. No deliveries are expected for at least five more days.

A salmonella outbreak has been identified at a plant that supplies some of your ingredients. Food has been recalled and production has been halted.