International Trade: Smarten up to talk the talk

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Abstract

International trade is currently under fire from many sides. Protectionist trade policies are on the rise, putting an end to the decade-long march of free trade. Making sense of the daily headlines and having an informed opinion on your own has rarely been more important than it is now.

Our work aims to explain the driving forces behind international trade, its history, how it shaped the world, its economic models, issues ranging from job losses to the environment and why eating kangaroos is better than buying local.

We summarize the most important academic literature on these topics in a non-technical, educational manner. If the readers conclude that our report has been useful in forming their own views on the pros and cons of international trade and that they can 'talk the talk', we are gratified with the fruit of our work.

Keywords: Introduction to international trade; history of trade; trade models; costs and benefits of trade; trade restrictions; free trade.

JEL classification: F1.

Contents

1 Introduction

Adam Smith, a Scottish economist who is often referred to as the founder of modern economics, claims that humans have the innate "propensity to truck, barter and exchange one thing for another." In modern words: The willingness to trade.

We trade if something else is more desirable than what we have currently. Such a trade makes all parties to the exchange better off. It is voluntary and only happens if all want the trade to happen.

David Friedman, son of the Nobel prize laureate Milton Friedman, said there are two ways to build cars. The obvious way is to use metal and machines to build cars. The other is to put seeds into the field, let it grow, harvest it, put it on board a ship and send it across the ocean. When the ship returns it is full of cars. International trade is the other way to produce cars without ever building a car plant.

But international trade can have forceful and long-lasting impact on countries, peoples' jobs and their well-being. On the one hand, shopping baskets and choice is larger and goods cheaper and more plentiful, thanks to international trade. Kiwis from New Zealand, holidays abroad – all results of and contributers to international trade. On the other hand, entire industries can disappear and never return, and with it the jobs in this sector.

The value of goods and services traded between countries around the world amounted to $23.01 trillion in 2018. World trade is larger than the GDP of the United States. The daily trade volume averages at a value of approximately $63 billion, higher than the annual GDP of Costa Rica. These numbers are huge because trade around the world is immense.

Yet hostility towards trade is common. Whether it be country leaders (such as the current U.S. President) who believe international trade can damage the prospects and well-being of their citizens, or climate activists who promote buying local.

Our aim is to provide the readers of our work with essential insights into the basics of trade, its history, its economic models and its impact on people and the world. We believe information rather than dogma is the key to an informed debate. Additionally, we hope that the reader can easily assess statements about trade on their accuracy. After reading this book we hope that every reader is able to understand for instance why the consumers are the ones paying mostly for tariffs and not the exporting country. We hope that this book enables the reader to lift the debate about trade to a more informed level. When you read our survey, we hope you will be able to make up your own

mind about trade and explain your views to others.

Chapter 2 of this book deals with trade throughout history, showing that trade existed since the beginning of mankind and that the world as know it today was shaped by trade. Empires rose and fell and with them trade flows increased or decreased. Our focus is mostly on Europe.

In Chapter 3 we explain trade theories that try to explain the patterns of trade and how trade emerges. The chapter covers the classical trade models devised by Adam Smith and David Ricardo. It also covers the modern trade models which emerged throughout the 20th century and amended the classical models in order to make them more realistic.

Finally, Chapter 4 deals with trade in our everyday live and the many prejudices people hold against trade, when it comes to jobs, labour standards and the environment. Furthermore, in this chapter we argue that trade is often hijacked by special interest groups and that as a result protectionism in the modern world persists despite the often-high costs to consumers and producers abroad.

Literature. At the end of each chapter we collect the main references as well as comments and further reading for specific sections. The literature listed in these sections is the main source of the text, unless stated otherwise. Links to webpages were valid on September 12, 2019.

2 History of Trade

Arthur W. Lewis, the first black professor in the UK, who worked at the University of Manchester, wrote "If our subject is lowering its sights, this may be because the demise of economic history in economics departments has brought us a generation of economists with no historical background." This quote captures beautifully a central issue. History happened for us to learn from it and to take it into account when forming an opinion. However, when it comes to trade it almost looks like people think trade is a modern phenomenon, and that the problems we face today are unique to our time. None of this is true. Trade and the exchange of goods already did take place a very, very long time ago. Even before ancient Greek and Roman times, people traded. But even in ancient times some people have been critical of trade and did not believe that it contributed to the common good.

Without trade some of the most important discoveries and voyages of our time would never have happened. Columbus would have never accidentally "discovered" the Americas. Spain would never have established colonies in Latin America. History without trade is like a cheeseburger without cheese. A brief overview, exploring reasons for trade since the dawn of man, follows.

If this vets the readers' interest for more, then our recommendations for further reading are Larry Neal and Rondo Cameron's book *A Concise Economic History of the World*, and *Power and Plenty: Trade, war and the world economy in the second millennium* by Ronald Findlay and Kevin H. O'Rourke.

2.1 Trade at the dawn of man

The first evidence of early exchange taking place to procure obsidian, which was distantly sourced to make tools, dates back around 300,000 years. Other sources date early exchange networks back to 100,000 to 130,000 years ago when tools made from obsidian were found in Tanzania.

Remarkable is the distance between the source of obsidian and the place where the tools were found: 200 miles. Not far by today's standards but a vast distance for hunter-gatherer groups who would encounter other, potentially hostile tribes and dangerous animals on their journey through the wilderness. The idea of a tribe or hunter traveling 200 miles to bring home some obsidian sounds rather improbable.

More likely it was trade that made this happen. Not by individuals such as merchants but as a group activity. (The idea of individuals carrying out trade as merchants will rise to prominence only much later in history.) As

a group it was easier to avoid the dangers of the Palaeolithic world. In order to obtain goods that are not readily available for a group they had to trade with other groups that might have access to the desired goods in their territory.

Exchange between groups was not necessarily always about everyday items or items of practical use such as obsidian. Goods that are exotic and rare, like seashells which seems to had ritual use and were hard to obtain, were traded as well. Shell beads made from seashells have been found in Morocco. What makes the finding so interesting is that the beads were found so far inland that the shells had to be brought there intentionally and could not have got there by natural force alone. Similar findings have been made in Algiers and Israel, showing that sea shells have been used as accessory but more importantly that countries started to develop exchange networks very early.

Rivers played a crucial role in connecting the East and the West. People could use the rivers to travel farther than on land. The Danube starts in Germany and travels almost 3,000 kilometres until it reaches the Black Sea at its Romanian coast. There is evidence of trade on the Danube going back 35,000 years.

But trade and travel became a much more important aspects of everyday live approximately 10,000 years ago when people started settling down, domesticated animals, grew plants and founded villages. Around that time people also gained the ability to travel the seas. Evidence of seafaring abilities date back 9,000 years in the Mediterranean. With its many islands, it allowed for trade even before the establishment of cities or nations. Throughout the next thousands of years, the Mediterranean will be crucial for trade and play an important role in most early empires.

As soon as people settled down and founded cities, trade became easier as goods where now able to travel greater distances by moving from tribe to tribe and therefore could travel much greater distances. For example, shells from India dating back to 5,000 BCE were found 1,000 miles away in Syria.

With the dawn of the Bronze Age the first empires emerged and many of them depended on import of raw materials and the export of manufactured goods. Trade patterns became more complex and more long-distance trade occurred. Trade was still dominated by luxury goods and essential raw materials that were worth to be transported over long distances.

Empires such a Mesopotamia and Egypt, both military powers in their time, relied on long-distance trade for export. Goods from Mesopotamia were found in Syria as early as 5,300 BCE. There is also evidence for trade relations between the Indus valley and Mesopotamia as early as 3,500 BCE, which even predates the Bronze Age. Egypt relied heavily on Mesopotamian trade, import-

ing mostly manufactured items such as textiles and bronze goods.

During the Bronze Age empires emerged, flourishing mostly through their ability to trade rather than through superior military power. Indeed they relied on trade to survive. The Phoenicians were a civilization mostly consisting of independent city states that mastered the art of sea travel and trade. In Greece the Minoans were the first civilization that traded with neighbouring islands since Neolithic times. However, in the middle of the first millennium BCE Minoan culture began to weaken and Mycenaean culture became the dominant one in Greece.

Since 3,000 BCE sea trade became more profitable as the big empires needed vast amounts of raw materials to keep their economies going. Most of the trade consisted of a complicated exchange of luxury goods for raw materials and it was the Phoenicians and Mycenaeans that dominated the trade for the next centuries. Ships and sailor knowledge developed rapidly and by 2,300 BCE the first large cargo vessels were venturing on the Mediterranean.

Although the trading empires did not possess vast natural resources, they acted as important intermediaries and facilitated trade between established empires. Already in those days, trade led to the creation of wealth and power.

Despite its rapid increase, trade mostly did not benefit the common people. The benefactor of trade in the ancient world were the state and the elites. The state had to procure raw materials to allow its industries to flourish, and elites relied on trade to maintain their privileged lifestyle. It is believed that elites not only profited from trade but often encouraged trade to enable them to obtain rare and prestigious goods.

Most empires used trade to obtain precious imports, not to create export markets to allow their economies to grow. Therefore, most empires exercised strict controls on trade ensuring that there wold be a steady inflow of goods. Exports were nevertheless important as they were used to pay for the huge inflow of goods. Often they were more the means to an end.

Around 1,900 BCE the first private merchants emerged. The best documented case for private enterprises that participated in trade is the old Assyrian trade network that was privately held. Old clay tablets show the relationship between different merchants. Although private enterprises participated in trade, trade itself was still heavily controlled by the respective governments and it would take over a thousand years before private entrepreneurs could operate independently.

The centre of trade and the world economy during the Bronze age were the early empires located around the Mediterranean in Africa or Asia. Europe only started its ascend onto the world stage of trade at the end of the Bronze age when trade routes ranged from Italy to Sweden.

2.2 Greece on the rise

At the end of the Bronze age Europe made its way onto the world stage in form of Greek traders. Greece's terrain did not allow for the mass cultivation of wheat. It specialised mainly in the export of olives, olive oil and wine. Wheat was imported from all around the Mediterranean. Greece's famed marketplaces (agoras) emerged not only as the centre of Greek life but as centre of trade.

Greece was divided in many independent city states that all traded independently from each other. Corinth was one of those city states and dominated much of the trade in the 7th and 6th century BCE. But soon Athens emerged as major naval power and forced its way on the global stage, surpassing Corinth as major Greek city state. Trade played an important part of everyday Greek live. It was not always seen as positive by influential Greek philosophers.

Although the Greek started to trade more, it was the Phoenicians who continued to dominate the sea and with it the trade throughout the Mediterranean. Trade settlements were established by the Phoenicians throughout the Mediterranean in the 8th century BCE. Greek traders would not do so for another 200 years.

Greeks however adopted technical terms in sailing and trade from the Phoenicians as well as their alphabet; all to help trade. This will not remain the only example where trade has been essential in spreading technology. In 814 BCE Phoenicians founded Carthage, a city that later played an important role in the history of the Roman empire. But the city's main purpose was that of a trading hub rather than of building an empire.

From the 7th century BCE onwards, the Etruscans, located in modern day Italy, were another major player in the international trade game. The Mediterranean became an area with active trade connections between many different empires and city states. With increasing integration, trade became more complex and a complicated system of exports and imports emerged. However, the rivalry between Greek city states and the Phoenicians resulted in chronic warfare between the Greek and Phoenicians in the 6th century. Throughout the first millennium BCE the carrying trade, i.e., the practice of transporting goods from A to B by carrying goods from other nations on board your ships, shifted slowly from the Phoenicians to the Greek.

2.3 How Rome changed trade

In 753 BCE Rome was founded (by the violent death of Remus according to Roman mythology) and it soon became one of the most dominant powers in the world history. Rome expanded its territory contin-

uously, bringing them into conflict with Greece that had holdings on the Italian peninsula and in Sicily. In the end Rome with its superior military army integrated Greece into its empire. Greek, however, was not only integrated into its empire but by extended trading privileges to the merchants from the Greek city states, Rome effectively integrated them into its trading empire as well.

In 30 BCE Rome invaded Egypt, and Alexandria soon became one of the most important trading hubs for Rome. Rome as well as other Greek city states heavily relied on trade because they were only self-sufficient in few goods and most goods had to be imported. Wheat imports to feed their population were especially crucial. Feeding Rome's growing population required that shipments of wheat from Egypt had to come on a regular basis.

Although trade played a major role in supporting cities or city states and luxury goods were highly sought-after, profits from trade profits could be substantial. Especially with high value goods like, silk from china and other items that were crafted in far away countries large profits could be made. Despite this, trade was seen as inferior to landowning. Money and power was mostly gained by large land estates. As a result, many Senators did think that trade was beneath them. Whether they did so only in public and privately participated in trade trough freedman or slaves, is still highly debated.

With the Roman empire's sprawl, its trading network grew as well as the development of infrastructure such as ports. Trade led to increased specialisation within the empire: grain imported from Egypt, oil and olives came mostly from Spain, and Italy exported wine and manufactured goods. The Roman empire also relied heavily on slave labour and as a result the slave trade played an important role in Roman times as well.

Under the Pax Romana, streets were built and sea traffic advanced. Between 200 BCE and 200 CE, sea traffic boomed and rose to a level which was not matched in the following thousand years. At its peak, the Roman empire controlled the entire Mediterranean, and regular long-distance trade as well as high sea trade was established under Roman rule. Long-distance trade stretched as far as China and India. There is evidence for Roman merchants in India and silk products that originated in China came to Rome via the Silk road.

With the invasion of Rome from several barbarian tribes and the fall of the Western Roman empire in 476, trade started to diminish. It would take centuries for trade to reach the same level of sophistication as under Roman rule.

2.4 Rome's fall shifted trade to Africa

With the fall of the Roman empire, the Islamic world gained in importance. It was much more open towards merchants than Christianity. In the late 7th century, Arabs and Persians traded with China and porcelain overtook silk as main Chinese export good. Trade also led to the the exchange of technology. The Indian numbering systems as well as the technology required for silk production, all found their way to the Islamic world through trade.

Trade also spread religion, culture and new consumer preferences. The predominance of Islam throughout sub-Saharan Africa can partially be explained through trade with North-African Muslims. The vast trading network of the Islamic world led to the adoption of Arabic as main language throughout the Indian ocean. Tea as well as sugar did not originate in Europe but have reached Europe first through trade.

During the early Middle Ages, which followed the fall of Rome, long-distance trade was mainly in luxury goods and slaves. The trade was mostly carried out by Syrians and Jews. Jews in particular played an important role as they facilitated the trade between Christian Europe and Islamic Africa.

2.5 Italy at it once again

Despite the fall of Rome, it have been Italian cities that started to prosper the most in the coming centuries. In 568, Venice was cut off from its holdings on the mainland. Since these used to supply Venice with wheat and other raw materials, Venice was forced into sea trade to survive. Due to its strategic location, it linked Byzantine and Europe, functioning as an important entrepôt for goods coming from the East.

The cities Genoa and Pisa also belonged to the so-called maritime republics that dominated much of the Mediterranean trade in the Middle Ages. Muslim raids in the early 11th century forced Genoa and Pisa to untie forces and to protect each other by building a navy. In 1284, when the Muslims where long defeated, Genoa defeated Pisa and solely controlled the western Mediterranean where it rivalled even Venice for the complete control of the Mediterranean.

The beginnings of Venice were humble, fishing and the production of salt were the main economic activities. But Venice soon established itself as one of the most important trading cities in the Mediterranean. By the year 1,000 it was the first city to solely rely on trade for its survival. Venice was able to expand its trade with the Byzantine empire in the late 11th century due to a "golden bull". This royal decree (issued by the Byzantine emperor) allowed Venice to trade freely with

the Byzantine empire, without paying any taxes or other duties on their traded goods, in return for support against the rising Norman power in south Italy.

At their prime the Italian city states were the cultural centres of Europe, dominated the trade between East and West and particularly the trade with China. Then Italian city states sparked a financial big bang by creating banking systems. A main reason to establish banks was to finance trade voyages which were very expensive.

Before banking and credit emerged, traders worked for their own account. It required huge sums of fixed capital to start a trading voyage. Originally retired merchants were willing to finance such trips. But as trade grew steadily and became more and more complex, financing institutions emerged. These allowed a vast network of partners and therefore were able to finance more voyages. Overall trade increased massively between 1150 and 1250, and Italian cities had monopolies on many exotic goods. Most prominently they had the monopoly on the lucrative spice trade.

2.6 Bye Europe, Hi Asia

In the early 13th century the Mongols under Genghis Khan conquered a vast empire which was set to become the largest contiguous empire in history. During this time the Pax Mongolica was established under which trade flourished.

Trade routes became safer and could be used day and night, without fear of bandits. But it was still a long journey for traders: It took between 8 and 11 months to reach China from Crimea. Due to the difficulty of the trip and the huge cost associated, mostly goods that had a high ratio of value to weight, such as spices and silk, were traded over such a long distance.

It was possible to make enormous profits despite the long journey. Customs duties and travel expenses could amount to 3,500 florins (more than one million pounds in today's money, although exact estimates on the Florentine's florin value are lacking). The obtained goods could then be sold at a profit of 25,000 florins. A return on investment of over 700%.

It was also during the Pax Mongolica when Marco Polo, a Venetian merchant and one of the most famous explorers, travelled to China and met Kublai Khan.

By 1335 the Pax Mongolica started to disintegrate. With it trade with China decreased. The Black Death, which devastated Europe by wiping out between 30% to 60% of Europe's population, originated in central Asia and was brought to Crimea via the Silk route, from where it spread throughout Europe.

But it was the Islamic empire that suffered the most during this time. Economic stagnation as well as the Black Death dealt its economy fatal blows. It was Europe that would re-

cover first, exporting manufactured goods, while the Islamic world would provide the raw materials.

2.7 The age of exploration, voyages and multinationals

Throughout the later Middle Ages notable progress in the art of shipbuilding and sailing was made. Ships got larger with more room for cargo, easier to manoeuvre and able to travel larger distances. Inventions like the compass, which originated in China and found its way to Europe, as well as progress in cartography made exploring the seas and travelling with ships much easier and safer.

The Italians had the advantage in the art of navigating and as early as 1291 a Genoese expedition tried to reach India by sailing around the Cape of Good Hope at the southern end of Africa. However this expedition was lost, never to be seen again. It were the Portuguese who would be the first nation to find a way to India from Europe via the sea.

Prince Henry of Portugal, also known as the "Navigator", was one of the most important figures in the early history of discovery and voyages. From 1418 until his death in 1460 he sent expeditions almost annually, founding trade relationships all along the African coast. But most importantly his work laid the foundation for later Portuguese discoveries. In 1481 King John II came to the throne and restored the policies of exploration. Under his reign, Portugal was able to round the Cape of Good Hope in 1488.

It was Spain though that made the most famous discovery. The discovery of the Americas. In 1492 the Spanish crown agreed to finance an expedition of a Genoese explorer to find a sea route to India. This Genoese explorer was Christopher Columbus and his story is well known. Instead of reaching India to establish a sea route for the spice trade, he "discovered" the Americas.

Spanish settlements were established in Hispaniola and Cuba. In 1497 Vasco da Gama, a Portuguese explorer, set sail to find a sea route to India in order to establish trade relations with the country that produced the highly sought-after spices. It took two years for the expedition to be completed.

In 1499 da Gama finally returned to Lisbon, and was greeted as a hero. Despite the loss of two ships and over half of his crew members and the failure to establish a commercial treaty with Calicut (a main objective), the voyage was seen as a success. The spices and other goods on board of the returning ships showed the potential richness that could be harboured by using this route. By 1513 the Portuguese ventured even further and arrived in Canton, South China. By the middle of the 16th century they opened up trade relations with Japan as well.

Spain was not idle during this time. After Columbus claimed territories in the Americas in the name of the Spanish Crown, Spain continued to explore. In 1519 Ferdinand Magellan tried to complete what Columbus never achieved: reaching the Spice Island by sailing west around South America. He died on this journey, but this expedition resulted in the first circumnavigation of the world.

In 1521 Hernan Cortes defeated the Aztec Empire, establishing New Spain. By 1532 Francisco Pizarro defeated the Incas in 1530s, establishing New Castile. Spain controlled almost all of the Americas except for Brazil which was discovered and claimed by Portugal in 1500.

It is important to recall that all these discoveries and expeditions where conducted with the goal of establishing profitable trade routes, and with it to bring new riches to the old world. Without trade and the prospect of new trade routes, these discoveries might never have happened.

Spain imported mostly gold and silver from its colonies, which laid its foundation as the richest empire in Europe. But Spain also imported maize, tobacco, potatoes and other exotic fruits. In return it exported cattle, pigs, sheep and horses.

Europe also exported sugar cane to the New World, which was originally not known there. Due to a more suitable climate, the trade flow would soon reverse with sugar being exported to Europe. Vast supply of sugar led to a decrease in price that allowed ordinary Europeans to consume this delicacy (to the detriment of dental health).

Sugar cane was also one of the main Brazilian exports to Portugal. Portugal also imported vast amounts of spices from its holdings in the East. In order to maintain the large increase in production of sugar cane in the new world, large numbers of slaves were required. By 1600 there was a regular slave trade from Africa to the New World.

2.8 Netherlands' way to domination

The Netherlands have been a part of the Spanish monarchy since 1556. In 1581 they established the Republic of the Seven United Netherlands. The Dutch Republic was a merchant oligarchy, very much like the Italian city states. But with a much larger population and more land, which could be used for agricultural production. Of the approximately 40,000 ships entering and leaving the Baltic Sea between the 15th and the mid-17th century, 60% were Dutch.

Innovation in shipping, most notably the fluyt, a cargo vessel designed in the shipyards of Hoorn, which greatly increased the carrying capacity while at the same time reducing labour cost, allowed the Dutch Republic to keep freight rates low and therefore could drive most competitors out of the carrying trade market.

Access to goods that could be carried was paramount. One of those was the spice market in Lisbon which was under Spanish rule since 1580. Access to Lisbon's harbour could be cut off at any time. This happened twice in 1585 and 1595.

A long-term solution that did not leave the Dutch at the whim of the Spanish Monarchy was to establish their own spice-trading network. A group of Amsterdam merchants set up the Compagnie van Verre (roughly translated as "long-distance company"), with the goal to break the Portuguese spice monopoly.

In 1595 the first expedition was sent to Java (one of the most important spice markets in the world) consisting of a fleet of 4 ships. Only 3 and less than half the crew returned in 1597. The amount of spices brought back were sufficient to consider the expedition a success though. Another expedition was sent to procure spices in 1598, consisting of 22 ships financed by 5 different merchant groups. They returned in 1599 with enough spices for the financiers to make a 400% profit.

In 1600 the English East India Company (EIC) was formed in Britain, in response to the expeditions by the Dutch and the fear to fall behind. It was granted a monopoly on all trade from England to the east. Further Dutch expeditions as well as the increased competition from the EIC led to an oversupply of spices. Prices plummeted in Europe while the price of spices at the source increased.

To protect the Dutch merchants from the ruinous competition, the Dutch East India Company (Verenigde OostIndische Compagnie or VOC in short) was formed. It obtained a monopoly for the trade with the East Indies for 21 years. The VOC was one of the first multinational companies, combining trading activity with production activity. It dominated entire areas which were necessary for the production of spices.

In 1619 the VOC founded the city of Batavia (today's Jakarta), its new headquarter, which was rebuild completely after the previous city was burned to the ground by the Dutch. The VOC was a huge success. The number of ships sent to the East Indies from the Netherlands increased sharply and the share price of the VOC rose fourfold. By 1669 the VOC was the most powerful company in the world. It had vast executive rights granted by the Dutch government, it had its own army and its own holdings overseas.

In the Atlantic, the Dutch were present as well. Just like in the East Indies, competition between Dutch merchants reduced profits. An integrated stock company (just like the VOC) was formed in 1621, called the West-Indische Compagnie (Dutch West India Company), WIC for short. WIC did try to establish the same from of dominance that the VOC established in the East Indies, but it failed. Facing both the Portuguese and Spanish fleet, proved too

much. As a result, it focused on peaceful trading after 1647, where the WIC found a highly profitable niche, the slave trade.

2.9 Global Mercantilism

The 17th and the early 19th century were time periods characterised by a struggle for power and colonial territories between European nations. In the middle of the 17th century it looked like the Dutch were having the upper hand. Their low freight rates drove out the competition. Their superiority in ship manufacturing allowed them to maintain dominance over much of the sea trade worldwide.

In 1651 and 1660 the UK passed two laws, the Navigation Acts. They essentially required all trade between England and its Colonies to be transported on board of English vessels. In 1663 the Staple Act required all European goods destined for the colonies to be first transported to England, where they were inspected and then transported to the colonies - but only on board of English ships.

The struggle for dominance in the sea trade led to several wars between the English and the Dutch. But neither the first nor the second Anglo-Dutch War were decisive in establishing superiority of any of the two nations.

With France another powerful player emerged. France raised tariffs for Dutch products in 1664 and 1667. The Dutch retaliated and a full-scale trade war broke out with ever rising tariffs. It resulted in the Franco-Dutch war of 1672. In 1678, Louis XIV of France emerged as the most powerful monarch in Europe. The English and French would continue to clash in the coming decades: in the Nine Years' War from 1689 – 1697 and in the War of the Spanish Succession from 1701–1713. Wars were often used to raise tariffs on goods in order to finance the huge war machinery necessary to fight wars.

The continuous struggle between European nations for power led to a set of policies known as mercantilism. Mercantilist policies arose as early as 1480 and would dominate the politics from the 16th to the 18th century. The mercantilist doctrine was that there is a strong relationship between power and wealth.

Wealth, often measured by the amount of precious metals available to a nation, was seen as necessary to obtain power. Wealth could fund effective naval as well as military forces, winning wars and securing control over markets or other trade monopolies. Colonies played an important role as supplier of raw material and market of manufactured goods.

Mercantilist nations in those days were locked in a zero-sum game where one nation can win only if someone else loses.

Mercantilism differed slightly from country to country. But six main policies were at the economic core of almost every country:

- The export of precious metals

such as gold and silver was forbidden. These were needed to pay for an army. Exporting these would result in empowering another country.

- Import restrictions were put in place to restrict the import of manufactured goods and only allow the import of raw materials. The import of cheap raw materials would lower the cost of producing manufactured goods, But the import restriction on manufactured goods intended to promote the country's own industry and harming the industry of rivalling countries.

- Exports of manufactured goods were encouraged, for the same reasons as stated above.

- Export of raw materials was restricted so that they were used at home to produce higher value manufactured goods. At the same time limiting the capability of other countries to manufacture goods.

- Technological export was restricted in order hinder the emergence of foreign competition.

- Navigation Laws were passed in many countries, mandating that most foreign trade had to be carried on domestic ships. This should ensure that the local shipping and shipbuilding industry was stimulated, which was necessary in the event of war.

Although the Navigation Acts helped the UK to establish itself as one of the leading European nations, mercantilism was not effective and struggled to bring prosperity to Europe. The increased protection of sectors also led to losses in competitiveness. Spain for example protected their clothing sector from 1552 to 1555. Then the protection was lifted. Within these few years, the Spanish clothing sector lost its competitiveness and Spain became an importer of clothing.

2.10 Game-changing UK

As we saw above, the 17th century was dominated by ongoing conflicts between the leading nations in Europe, and many wars were fought between them. Despite the rise of mercantilist policies, the Dutch empire was one of the few havens of free trade in Europe. Compared to its larger and more populous neighbours, the Netherlands did not participate in mercantilist policies and were an important marketplace. However, there was one major exception to this practiced freedom. The Dutch colonial empire, the VOC as well as the WIC had monopoly power of the trade with the Dutch colonies and, therefore, no other country was allowed to trade with the colonies.

The British followed the example

set by the Dutch. By passing the Navigation Acts it quasi-monopolised trade with its colonies as well. It was a huge success for the UK. Before the English civil war 80% of exports consisted of woollen cloth. By 1700 however that figure had fallen to less than half of all exports due to an increase in colonial reexport of goods which was made possible by the Navigation Acts.

England and France were involved in a series of wars starting the late 15th century. Conflicts between the two nations lingered on until the early 19th century. In order to raise revenue for these wars and to maintain its expensive fleet, England had to raise taxes at home as well as in the colonies.

The raise of taxes led to the U.S. Declaration of Independence in 1776. The war of independence in the U.S. left the UK as well as France heavily indebted. The fourth Anglo-Dutch War from 1780-1784 led to a decisive English victory, establishing English superiority on the sea. It exacerbated the decline of the VOC, once the most powerful company on earth. In 1799 the Dutch East India Company was formally dissolved and, with it, the Dutch ceased to be a dominant superpower in Europe.

Although the Navigation Acts helped the UK to establish itself as one of the leading European nations, mercantilism was not effective and struggled to bring prosperity to Europe. The increased protection of sectors also led to losses in competitiveness. Spain for example protected their clothing sector from 1552 to 1555. Then the protection was lifted. Within these few years, the Spanish clothing sector lost its competitiveness and Spain became an importer of clothing.

The end of mercantilist policies and the following more peaceful 19th century helped to deliver a trade boom that brought prosperity to Europe.

2.11 Age of free trade

In 1750 the industrial revolution started in Britain. Adam Smith published The Wealth of Nations in 1776, arguing forcefully against mercantilist policies. Strong independence movements in Latin America in the late 18th century resulted in the loss of colonial holdings there for European nations. The French Revolution in 1789 brought turmoil to one of the biggest and most powerful countries in the World. The 18th century was a time of change and development, but it would be the 19th century that really promoted trade.

The beginning of the 19th century experienced the Napoleonic Wars, a period lasting from 1803 until 1815. After the war European borders were redrawn, the Spanish colonial empire collapsed due to the independence movements in Latin America. and Britain once again cemented its standing as the superior power in Europe.

At the end of the Napoleonic

wars, the UK was responsible between one fourth to one third of total international commerce. In the immediate aftermath of the Napoleonic wars, Europe was mostly protectionist, except for small countries such as the Netherlands and Denmark.

Britain passed the controversial Corn Laws in 1815 in response to falling wheat prices after the war, which resulted in an exclusion of foreign wheat from the British market.

The industrial revolution in Britain did not only lead to a superior British manufacturing, it also led to better infrastructure in Britain. Better roads cut the travel time from Manchester to London to less than half. The first fully functioning railway steam-locomotive was built in Britain in 1804, and in 1830 the first public railroad using only steam operated railroads was built to connect Liverpool and Manchester.

Soon other European countries as well as the United States and Canada followed and built their own railways systems. The railway was not the only important transport invention in the 19th century. In 1807 the steamship was developed in the U.S.

The first regular transatlantic service began in 1838 from England to New York. However, it would take until the mid-19th century to make steamships a breakthrough innovation in trade. The invention of the screw propeller, the compound engine and the steel hull helped to replace sailing ships in the transport of goods.

Before these innovations, steamships were mainly used to transport people and high-value goods. With the opening of the Suez Canal in 1869, steamships had another breakthrough. Sailing ships were not able to use the canal. Because of unfavourable winds, they would had to be towed through the canal, whereas steamships did not rely on wind.

In 1866 the first transatlantic telegramme line opened, linking London with New York, which led to immense increase in the speed of communication. In 1875 refrigerator technology was developed, enabling the export of fresh meat from Argentina, New Zealand and the U.S. to Europe.

As a result of these transport inventions, freight rates fell dramatically. Between 1740 and 1840 freight rates were roughly constant. But between 1840 and 1910 they dropped by 70%, leading to a dramatic increase in trade. Between 1800 and 1903 the volume of trade worldwide increased 20-fold. Trade grew much faster than world production. Three quarters of that trade was concentrated within Europe.

Other reasons contributed to the expansion of trade in the 19th century. A series of trade policies were directed towards opening the markets. The first major European nation that started to open up their markets was Britain. In the wake of the industrial revolution, Britain started to move away from its mercantilist policy. It repealed the Nav-

igation Acts in 1818 and, by 1830, only a few industrial tariffs and restrictions remained.

The most notable obstacle to free trade remained the hugely protected agricultural sector. It would take until 1846 until the Corn Laws were repealed. The UK had completed its turn towards free trade. It led to a chain reaction. Other countries followed and liberalised trade as well, for example Spain and Austria.

Throughout the 1850s average tariffs were falling and, in 1860, the Cobden-Chevalier treaty, a free trade agreement between France and the UK further promoted the case of free trade. The treaty included a so-called most-favoured-nation (MFN) clause, which means that if they negotiate a new trade agreement with other nation, the new tariffs will automatically apply to all other partners with an MFN clause.

If, say, the UK were to negotiate a trade agreement with Spain and grants Spain better tariff conditions. Then these better tariff conditions would automatically apply to French goods as well due to MFN.

The inclusive nature of MFN probably had a substantial impact on the speed at which tariffs were reduced. By the 1870s, tariffs had fallen to some 9-12% on the European mainland. 1846-1880 was the age of free trade.

Although in Europe free trade was dominating, it was not the most prominent form of policy around the world. The U.S. as well as Australia maintained high tariff walls for much of the 19th century. China was forced by Britain to stay open and allow further opium trade. Japan was forced open in 1853 by the U.S. marine. Japan, which had been living in almost complete autarky over two centuries, saw foreign trade rose 70-fold in the following fifteen years Latin America also maintained high tariffs, which were among the highest in the world. After most countries gained their independence from their colonial rulers, they struck of their colonial restrictions and started to raise tariffs in order to generate revenue.

For Europe a turning point in free trade was reached when cheap grain from the New World as well as Russia led to a fall in grain prices. Demands for protection grew in many countries. In Germany the land-owning agricultural elite first promoted free trade, but now facing a fall in prices, demanded protectionist measures. After 1878 most major countries in Europe - except for Britain - had reversed their initial free trade policy and reverted back to protectionism.

Denmark did not resort to protectionist measure but decided to modernize their economy and become an exporter of animal products, while importing cheap gain from abroad. However, most other European countries, where the land-owning elite was often powerful, such as France and Sweden, followed the example set by Germany and raised tariffs. High tariffs meant high grain prices.

In the U.S., northern manufacturers demanded protection from their European competition whereas the agricultural South demanded free trade to sell their products to Europe. With the North winning the civil war, the path to high industrial tariffs was clear.

Despite the protectionist measures, shipping tonnage between 1870 and 1900 tripled, the value of exports between 1850 and 1900 quintupled and then doubled from 1900 to 1914. Overall trade continued to grow by 4% annually in the last half of the 19th century.

It is perhaps surprising but the 19th century was more globalizing than the 20th century. Despite protectionist measures! Throughout the 19th century the ratio of exports to GDP grew more rapidly than in the 20th century. The 19th century was also a time of great specialisation; Europe was the main producer of industrial goods. Asia and Africa where the main exporter of raw materials. The first World War in 1914-1918 brought the European trade to a halt. It would take until well after the second World War until the world would be as connected as before.

2.12 Rough 20th century

The first World War led to an end of the liberal economic order. Most countries had started to revert back to protectionist measures earlier. Even Britain, the champion of for free trade, passed legislation such as the McKenna Tariff and the Safeguarding of Industries Act which resulted in increased protectionism.

Throughout the war, governments actively managed the economy as well as trade, regulating which goods could be exported and imported. Throughout the first World War, trade decreased and the overall volume of trade plunged. Britain lost its role as economic superpower and was overtaken by the U.S. which emerged from World War I as most powerful economic nation in the world.

European producers increased production in order to meet wartime demand for goods. Many non-European producers of raw materials also expanded their production in order to meet Europe's war time demand. Additionally, countries that relied on Europe for the import of manufactured goods started to establish their own manufacturing industries as Europe was unwilling and unable to export crucial manufactured goods.

Both industries suffered from overcapacity when the war ended. Too much supply on the world market meant dropping prices. Manufacturing industries demanded protection from the European competition after the war has ended due to their lack of competitiveness.

European companies demanded protection because they could not recover their lost export markets. In agriculture, demand for protectionism rose as well. The U.S. had supplied much of Europe with cheap

grain throughout the war. But as agriculture in Europe recovered from the war, prices plummeted due to an oversupply of grain.

Unsurprisingly, the average tariff levels in the middle of the 1920s were far higher than they were in 1913 shortly before World War I broke out.

2.13 Global problems, global solutions

With the outbreak of the Great Depression in 1929 the problems of declining industries were exacerbated, and governments were pushed towards greater tariff protection. World trade decreased by two-thirds during the Great Depression. In 1930, the U.S. passed the Smoot-Hawley Tariff that raised protection in industry as well as agriculture. It resulted in a chain reaction as other nations erected further trade barriers.

The U.S. was not the unilateral protector and promoter of free trade as Britain was in the 19th century. Overall trade grew much slower between World War I and II than during half the century preceding World War I. Trade in manufactured goods as well as in primary products fell. It was a time of increased economic nationalism which resulted in reverting back to mercantilist policies.

With the start of World War II trade once again came to a halt. In 1939 trade between the warring nations completely stopped. Trade within the axis and allied powers probably increased. The war – and with it the increased demand for goods in Europe – led to a huge increase in exports by the U.S. and Canada.

The economic outlook in Europe after World War II was bleak. There were extensive property damages, industrial production was half of what it was before World War II and agricultural production was lagging as well.

After World War II the U.S. once again cemented their status as the world's foremost superpower. Although another powerful player emerged, the Soviet Union.

The Marshall plan in 1947 granted Europe much needed financial help. In return economic reforms were demanded that steered most of Western and middle Europe towards free markets and free trade, therefore aiding economic integration in Europe.

Although the Soviet Union was initially invited to participate as well, they withdraw after the first round and pressured Czechoslovakia and Poland which accepted subsequent invitations to decline as well. The result was an economic East-West divide. The Soviet Union withdrew itself from most emerging international organizations. And with it from continuous international economic integration.

Even before the second World War officially ended, the leaders of the allied nations came together in Bretton Woods to establish a series

of rules for the post war international monetary system. Besides the creation of the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (IBRD), also known as the World Bank, the Bretton Woods conference laid the foundation for the creation of the international trade organization (ITO).

A charter for the ITO was established, in which basic rules for international trade were laid out. The Charter was signed in 1948 in Havana but was never ratified by the U.S. Without the support of the U.S., the ITO never came to life.

However, in 1947 twenty-three nations signed the General Agreement on Tariffs and Trade which was part of the ITO negotiations. Due to the failure to establish the ITO, GATT was used as framework in which trade deals and other economic policies were negotiated. It was replaced by the WTO in 1995. Although GATT was less than many countries had hoped for, its membership increased from its initial 23 members to more than 82 only two decades later.

GATT brought back the MFN clause, pledged to reduce tariffs and outlawed import or export quotas (restrictions on amounts). Less developed countries that joined that GATT were not required to completely open to trade as the GATT agreement allowed protection for countries with low standards of living.

Under GATT a number of conferences were held to reduce tariffs. The first round in Geneva, where the agreement was signed, was a success as 123 bilateral agreements were reached. However, in most of the following rounds, only a few new trade agreements were reached. Although new member states signed the treaty, the process of reducing trade barriers stalled. It would take until the Kennedy round in the 1960s to revitalize the process and tariffs were cut again.

2.14 Trade and Cold War

In 1949 the U.S. passed the Export Control Act which controlled the goods and the quantities sold by the U.S. worldwide. To enforce the law, the U.S. had to rely on its allies. In 1950, after the Korean civil war broke out and Mao Zedong had brought entire China under his control, the U.S. as well as its European allies implemented an export blockade to harm communist development. The Cold War had begun.

Europe realised that in order to preserve peace and ensure economic growth it had to integrate. In 1957 the European Economic Community (EEC) was created. A common market was created between the Benelux countries, France, Germany and Italy, slashing all tariffs between them in 1968. In 1960 the European Free trade Area (EFTA) was created and it came into effect six years later in 1966.

In 1992 the European Economic

Area was created by a merger of the EEC and the EFTA. It came into effect in 1994. A further step was taken towards European integration and free trade. In the two decades from 1950 until 1970, trade grew worldwide at an average 8% per year. One of the highest continued increases in worldwide trade in history.

2.15 Autarky at an end

In 1978 China opened its economy to the world markets. Throughout the late 1980s and the beginning of the 1990s, Latin America started to liberalize their economies, cut budget deficits and eliminated restrictions on trade.

The Soviet Union collapsed in 1991, reminding the world that economic autarky is not the solution. Economic liberalization and integration are enabling countries to grow and succeed.

Developments in transportation leading to bigger and better ships, but most importantly, containerisation lowered transportation cost by up to 90%.

Before container were used, goods were transported in bulk. That meant ships had to be loaded and unloaded by hand, which resulted in high cost due to the hours of labour needed and the time that ships spend idle in harbours. It required 150 or more longshoremen working for at four days to load and unload a ship.

The UK was the first country to start containerisation in the early 18th century when containers were used to transport coal. However, the break-through in containerisation happened in the mid-20th century when Malcom McLean developed a shipping container that could be efficiently loaded and secured onboard of ships. With this invention the way was cleared for standardised containers as we still know them today.

Ships loading the newly developed containers were able to be unloaded and loaded by 14 men in one day. This resulted in immense savings and therefore increased the profitability of shipping companies. As McLean himself said: “A ship earns money only when she’s at sea”.

The increase in trade brought many advantages to consumers. There was an increase in the variety of goods available to them. Kiwis from New Zealand became a regular fruit in supermarkets around the world. Lower prices due to increased international competition. Better quality compared to purely domestic supply as well.

On the other hand, global inequality rose when prices for raw materials and agricultural products dropped in the 1980s and 1990s. This resulted in high unemployment in poor countries.

At the end of the 20th century, autarky, which prevailed for much the first half of the century, was a thing of the past. Trade was freer and the ratio of world trade to GDP was greater than ever before. This age showed that development and economic liber-

alisation could go hand in hand, import substitution used most prominently in India and Latin America, although sometimes initially successful, proved to be inefficient and unsuccessful in the long run.

Adding a grain of salt, one should not forget that the United Kingdom had higher tariff protection for manufacturing in place in 2000 than they had before World War I.

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3 Trade Models

3.1 Why countries trade

Trade started with the dawn of man and is a driving force behind exploration and the relations between countries. This is the main message of the previous chapter.

Often the reason for trade is obvious. Country A has sea access and can sell fish to country B which has beautiful forests with many dear that can be hunted and its meat sold to country A. Both countries obtain goods they did not have before they traded with each other. Everyone is happier. If you buy a new mobile phone in the UK, chances are that it is imported; the same is true for bananas and many other fruits. Although the UK climate is not really suited to growing bananas, with greenhouses it would certainly be possible to do so. Phones could easily be manufactured in the UK as well.

So why is the UK importing rather than producing mobile phones and bananas? To explain such trade patterns, we resort to the most useful tool in economics: A model. Economists are obsessed with models and they try to model everything with the goal of assessing and predicting the real world. Gary Becker even tried to explain the economic rationale behind dating, marriage and the number of children in families .

Models are a simplification of reality; often a gross simplification one should add. But we will learn how they can help us to gain insights into how trade works and the intuition behind trade patterns.

3.2 Absolute advantage

The Scottish economist Adam Smith, revered as one of the founding fathers of modern economics, prominently wrote about free trade in 1776. He outlined a theory why countries trade in his famous book The Wealth of Nations, known today as the theory of absolute advantage. Absolute advantage is a simple yet beautiful concept which says: If I can produce something better or more efficient than somebody else, I will do it and the other will not. If I can mow a lawn in half the time than my neighbour John who needs an hour, I have the absolute advantage in mowing a lawn. However, if John cleans dishes twice as fast as me (coincidentally I need an hour for this chore), John has an absolute advantage cleaning dishes.

Suppose John and I want to meet for a pint at the local pub on Sunday. But before our partners give their permission for us to leave for the pub, we have to mow lawns and clean dishes. Of course, we want to spend as little time as possible on our chores

and as much time as possible at the pub. A smart reader will immediately realise what John and I should do. We should swap our chores. I should mow John's and my lawn, and John should do his and my dishes. We will both be done in an hour, saving 30 minutes each.

In such a win-win situation only our partners' objections "you stay at home until the work is done" can prevent us from realising this mutually beneficial plan. Autarky, the state in which we do not trade but slog it out ourselves, is clearly inferior to one where we can trade.

Let us transfer this illustrative example to a more complex environment: Trade between countries. We construct a simple model: Assume there are only two countries with made-up names, the VL and Dijob who produce two goods, fish and cooking oil with labour as the only input to the production process. This means it only needs labour to produce fish as well as oil. In the VL it takes 8 hours to produce one large drum of cooking oil and 4 hours to catch one barrel of fish. In Dijob it only takes 4 hours to produce the drum of oil but 8 hours to catch that much fish. Workers in each country want to consume both goods each day. Let us organize the data in a table:

Country	Fish	Oil
VL	4	8
Dijob	8	4

Absolute advantage, as explained above, means one country can produce a good more efficient than the other country. The table says Dijob is better at producing oil and the VL is better at producing fish. So Dijob has an absolute advantage in producing oil and the VL has an absolute advantage producing fish. Let us do a thought-experiment: If the VL produces one fewer drum of oil, 8 hours of work are freed up. In these 8 hours, 2 additional barrels of fish can be produced. In Dijob 8 hours of work are freed up for each barrel of fish not produced, allowing to produce 2 drums of oil.

During a single 8 hour work day, the average VL worker produces 1 barrel of fish and half a drum of oil whereas a worker in Dijob produces 1 drum of oil and half a barrel of fish. This is the situation under autarky where no trade occurs.

But assume there are no barriers of trade between the two countries, maybe due to a policy change and a trade agreement, or simply because people see the differences in efficiency and realize there a mutually beneficial gains to be made from trade. Such a situation will necessarily lead to specialization.

Dijob specializes in the production of oil, producing 2 drums per worker per day and the VL specializes in the production of fish with an output of 2 barrels per worker per day. So overall output (the "world" output in our model) increases for each good. Now one drum of cooking oil and one barrel of fish are produced every single day per worker. A gain

of one third of each good. If both countries exchange goods one for one, each worker can consumption more.

The concept of absolute advantage makes sense, and it is very intuitive: A country should produce and export the goods that it can produce more efficiently and import the goods that other countries are more efficient in. Due to specialisation overall output increases and everybody gains. The theory implies that trade is beneficial, and nobody loses out. But there are some issues with this theory which are highlighted below. Question: can you think of one problem with the concept? Worse, empirical data make it hard to validate absolute advantage as main driver of trade.

3.3 Comparative advantage

You may ask "What happens if a country has an absolute advantage in producing everything?" Surely the result cannot be that the other country produces nothing and all workers are out of work.

David Ricardo, an English economist, came up with an explanation how trade could still happen between countries although one of them has an absolute advantage in the production of every single good. He formulated the theory of comparative advantage.

Let's go back to the example involving my neighbour John. John is a self-employed software developer, producing software for large companies. For one hour of his work he bills his clients £1,000. Recall that John is twice as fast as I doing the dishes, and only needs 30 minutes what takes me an hour.

I, on the other hand, am an economics student, with a modest hourly wage of £10 earned by participating in behavioural experiments that economics professors run all the time.

Although John earns more per hour and is better at doing the dishes (note the absolute advantage!), it would make sense for him to hire me to do his dishes although I need twice as much time.

The logic behind this intuitive insight is supported by what economists call "opportunity cost".

Opportunity cost is the cost I incur by doing the dishes for an hour instead of working at uni and earn £10. John's opportunity cost is £500 as he loses half an hour time for programming software. Therefore, there are potential gains from trade. If John pays me £20 to do his dishes we are both better off. He earns an additional £450 and I am £10 better off. The reason for this outcome is that I have a comparative advantage in cleaning the dishes although John has an absolute advantage. Even though my dishwashing skills and salary are inferior to his, we are both better off with trade rather than without it.

This simple example can be applied to world trade as before. Our two countries are still the VL and Dijob and they still only produce two

goods. (Although the model can be extended to many goods to make it more realistic .) The two goods produced are still cooking oil and fish with labour as the only input. But the VL now has an absolute advantage in both goods, it needs 4 hours to produce 1 barrel of fish and 3 hours to produce one drum of oil. Higher productivity in the VL could be the result of better training that made workers more efficient. In Dijob things have not changed. A barrel of fish still requires 8 hours of work and producing 1 drum of oil is unchanged at 4 hours of work. The new data are:

Country	Fish	Oil
VL	4	3
Dijob	8	4

Let us change our perspective a bit and work out the potential output per 8-hour work day in each country:

Country	Fish	Oil
VL	2	2.6
Dijob	1	2

If you like puzzles, look at the table and try to work out who produces how much of the two goods.

There are two ways to determine where a country's comparative advantage lies and, therefore, which product it should produce.

First a country should produce the good in which it has the least absolute disadvantage if it has no absolute advantage at all. Or, if it has an absolute advantage in producing of both goods, produce the good where it has the greatest absolute advantage.

The second way is more tricky. It works via comparing relative prices: the country should produce the good which has a lower relative price. We saw this reasoning in action in our previous example. The relative price for me to do the dishes was lower than the relative price for John.

Dijob has no absolute advantage but it is only 1.33 times as unproductive at producing oil compared to 2 times as unproductive at producing fish. Dijob has the least absolute disadvantage in oil and should therefore specialise in its production. For the VL the situation is reversed and it should specialise in the production of fish and import oil from Dijob.

Another way to come to this conclusion is to compare opportunity costs. We have seen a country should produce the good with the lowest opportunity cost. In the VL producing one barrel of fish takes 4 hours. In that amount of time 1.33 drums of cooking oil can be produced. For the VL the opportunity cost of one barrel of fish is 1.33 drums of oil. And producing one drum of oil results in the opportunity cost of 0.75 barrels of fish. For Dijob the opportunity cost of producing one barrel of fish is 2 oil drums. In other words, producing one drum of oil has the opportunity cost of half a barrel of fish.

Since 0.75 is greater than 0.5, Dijob can produce cooking oil "cheaper" than the VL. Comparing the opportunity cost for fish shows that the VL

has the lower opportunity cost (as 2 is greater than 1.33). As a result, the VL should export fish and import oil. The opposite holds true for Dijob.

Two issues arise. First, are the countries better off with trade than without (the autarky situation)? Second, is the trade pattern predicted by the concept of comparative advantage realistic?

Indeed, we can quantify the effect of trade and the role of comparative advantage in our example. We can also assert that the outcome is the best possible one.

Unfortunately (for the economists!) it does not happen very often that a country goes from autarky to free trade. But there is one famous exception. As we learned in Chapter 2, Japan was almost completely isolated from world trade until it was forced to open up to trade in the middle of the 19th century.

The emerging trade patterns in Japan supported the assumptions of comparative advantage. That is good news for this concept. But did trade make the Japanese people better off? Yes, is the answer (luckily for trade economists and the Japanese people). It is estimated that the improved terms of trade and adoption of improved technology from abroad resulted in as much as a 65% rise in real national incomes.

The Ricardian model predicts a high degree of specialisation. Actually, specialisation to a degree that countries completely specialise in a certain industry and abandon all other industries completely. But this is not something observed in the real world for the majority of countries.

Despite these counter-factual implication, the Ricardian model leads to some interesting conclusions: A country can benefit from trade although the country has an absolute disadvantage at producing any good; comparative advantage depends on the domestic wage rate and not only on the productivity of an industry; wage rate is determined by an absolute advantage and thus it is an explanation why "poor" countries export (due to their lower wage rate).

Possibly the most important insight is that low wage competition is not harmful for the economy because all that matters is that a country can buy some products cheaper than it would be if it produced these goods itself. If that is the case, everyone will benefit.

The Ricardian model can be misleading in some respects. As we have seen earlier, the greatest gains from trade can be achieved through specialisation. The Ricardian model predicts specialisation to a degree that countries completely specialise in certain industries and abandon all other industries completely. But this is not something observed in the real world for the majority of countries.

For example, the car manufacturing industry is divided between different countries. According to Ricardo that should not happen. There is a straightforward reason for this flaw: Ricardo neglects the other factors of

production, capital and land. In other words, he simplified too much.

3.4 Specific factor model

The Ricardian model neglects other factors of production such as capital and land. As the reader will have anticipated, there are more sophisticated models where these factors are considered. The specific sector model incorporates labour, capital and land. The model will give more accurate predictions about trade patterns, and it will help us to analyse who wins and who loses from trade in the short run. So, ultimately, whether a rational person "fears" globalization and free trade or welcomes it will depend on your personal and professional circumstances.

A specific factor model is introduced and analysed. As we know by now, some assumptions will have to be made. There are still only two countries, the VL and Dijob, which still produce only two goods, fish and cooking oil but this time we assume labour is not the only input. In addition to labour, land is used in the production of cooking oil and capital (say, fishing boats) in the production of fish.

In other words, capital is "specific" to fish production and land is "specific" to cooking oil production. Specific thus means that we only need labour and the specific factor to produce the good. Nothing else.

Labour can move between the industries of a country but not between countries (at least for now but this can be changed later). The other two factors, land and machines, can not move at all; these factors are specific to the country and the industry.

How realistic are these simplifications used to construct our model? Reality is that labour migration in general is not as free as someone might believe if she lives in the EU which has free movement of labour.

Factories are not easily moved between countries. Access to the fishing areas of other countries has to be negotiated. None of these factors of production are quickly, cheaply and easily moved between countries or industries. Land cannot be moved at all. Obviously other factors are not completely immobile, but they are in the short run. In the long run factories can be repurposed, newly build, fishing rights can be changed, and land leased.

We now turn to the analysis of the model.

Labour mobility implies that wages have to be the same in both industries. Otherwise the "mobile" workers move to the industry that offers better pay. To attract workers, the industry with lower pay has to raise wages up to the point where it matches that of the other sector in the economy. When wages are equal, workers see no point in moving between the two industries. How many of the workers are in a particular industry depends.

It depends on the amount of land

and capital available. There is little point in putting more fishermen on board a vessel beyond the normal crew count as it will not increase the catch. The same holds true in a pizza restaurant.

Imagine a pizza restaurant with two pizza ovens. One chef needs 1 hour to make 20 pizze (the Italian plural of pizza). Now, the restaurant hires an additional chef. Both chefs together make 40 pizze per hour. Following this positive outcome, the restaurant decides to hire another 10 chefs in the believe that all 12 chefs together make in total 72 pizze per hour. However, with just 2 ovens this is simply not feasible. Hence, each additional chef will add fewer and fewer pizze to the total output. In economics this principle is called diminishing returns to scale. Increasing inputs lead to a slower and slower increase in output. The restaurant would have to increase the number of ovens to make the best use of the labour hired.

The comparative advantage is just as before. The potential output per 8-hour workday in each country is:

Country	Fish	Oil
VL	2	2.6
Dijob	1	2

In order for trade to take place, opportunity costs have to differ between countries. As we have seen before, the opportunity cost of producing one barrel of fish in the VL is 1.33 drums of oil. Thus, we say the relative price of one barrel of fish is 1.33. The relative price of oil is the inverse of the relative oil price. Hence, the relative price of cooking oil in the VL is 0.75. In Dijob the relative price for oil is one half and for fish it is 2. Therefore, we conclude that cooking oil is cheaper in Dijob and fish is cheaper in the VL.

Without any trade, consumers in both countries can only consume what they produce. Luckily for the consumers, the countries' governments sign a free trade agreement.

As a result of the free trade agreement, both countries start trading and prices will change. In fact, both relative prices have to become equal. Otherwise it would pay to ship more goods between the two countries.

The relative price of cooking oil can go up because oil gets more expensive. Or because fish gets cheaper. Or both. Or because oil and fish both get more expensive but oil more so. Or both get cheaper but fish more so.

The only sure prediction is that with trade the relative price is somewhere between 0.5 (Dijob's pre-trade one) and 0.75 (the VL's pre-trade one).

When trading is possible, the VL will export fish and Dijob oil - that would be the case in the Ricardian model. But not in the specific sector model due to diminishing returns to scale. Firms would specialise but they will keep some production capacity of both goods. We are moving away from a given output table and are focusing more on relative prices. Furthermore, the specific sec-

tor model is a short-run model therefore capital as well as land is fixed and we cannot add any of these two goods. Factories facing diminishing returns to scale and no way to increase their capital therefore output is constrained by the available capital and as a result there will never be a case where production is zero for any factor.

Given the new world market prices, Dijob workers will say that oil has become relatively more expensive, while the VL workers will find that fish is now relatively more expensive.

Suppose the relative world market price is 0.6. Then a drum of cooking oil will cost the same as 0.6 barrels of fish. The value of goods produced in Dijob is 60% of those produced in the VL.

The new trade pattern and the resulting change in output in the VL and Dijob has distributional consequences for landowners, capital owners and workers.

Let's start by analysing the consequences for capital owners in Dijob. Fish is no longer produced in Dijob. There is no longer any demand for your capital. Your income falls and you will no longer be able to buy as much as you used to do.

If you are a landowner, you profit from the newly emerged trade patterns. The price for oil in Dijob rises and as a result your land becomes more valuable as it is needed for production of grain or sun flowers that are processed to oil. A land owner's real income will rise and she will be able to buy more of both goods.

There is an important lesson here. An increase in the relative price of a good will increase the real income earned by the factor specific to that industry. But it will decrease the real income of factors specific to the other industry. In Dijob the real income earned by land owners increases whereas the real income earned by the capital owners decreases.

More important however is what happens to labour. Their overall wage increases. But they are facing higher prices for oil but lower prices for fish. Hence if a worker likes to consume more oil than fish, he is likely to be worse off. A worker who likes to consume more fish is better off with international trade.

In conclusion it depends on your consumption pattern whether you benefit from international trade.

3.5 Gains/cost of trade

Trade between countries is not sure to be a good thing for everyone. There are negative effects on the income distribution. If you own immobile factors of production in an industry that faces new competition, you are worse off with international trade. If you prefer to consume goods whose prices rise due to higher demand from foreign countries, you can be worse off as well. If your wage increases enough, however, you will be better off.

The model says that labour can move from one industry to another

without any barriers. But this is often not so in the real world. Low skilled workers can often find it difficult to make the transition from one industry into the other. Low skilled workers are therefore more likely to lose from international trade.

Despite the negative effects mentioned, the economy as whole is still better off with trade. If (a big "if") it would be possible to effectively distribute the additional goods gained from trade among the "losers from international trade", everybody can be made better off. Even those people that initially lost.

3.6 Heckscher-Ohlin

In the Ricardian model and in the specific sector model it was assumed that one country can produce something better mostly as a result of technological difference in countries. However, most countries in the developed world have very similar technological levels.

Spain is the world's biggest exporter of oranges. France the world's biggest importer. Both countries have access to the same technology for growing oranges. But Spain has more favourable weather to produce oranges. Countries are naturally differently endowed with certain resources. Spain also has more arable land that is better suited for the cultivation of oranges than has France.

As we have observed from this example, on the one hand, both countries have the technology to produce the required goods. On the other hand, each country possesses different resources that make it easier to produce some goods.

The Heckscher-Ohlin model deals with this situation. It allows countries with the same level of technological knowledge to trade with each other based on their resources. Therefore, it offers an explanation why Germany trades with the UK and not only with less developed countries.

The Heckscher-Ohlin model also offers an explanation why we do not observe the extreme levels of specialisation predicted by Ricardo's model. But the main feature of the Heckscher-Ohlin model is that it can predict the outcome of trade much more accurate than the specific sector model as it looks at the long run.

Like always, the model needs assumptions to work. There are only two countries, the VL and Dijob, they produce two goods, fish and cooking oil. The difference to the specific factor model is that for the production of the two goods only labour and capital is required, a completely immobile factor (such as land) no longer plays a role.

Imagine a world like ours today. In addition to labour, machines are the most expensive input to production. Arable land is cheap and plentiful in comparison. Growing grain or sun flowers for cooking oil requires harvesters and production plant to press the seeds and extract the oil. Fishing is capital intense with expen-

sive trawlers or fish factory vessels. All of these fall under the category "capital".

Capital and labour in the Heckscher-Ohlin model can move between the two different industry sectors but not between countries. Another assumption is that the VL and Dijob differ in their endowment of capital and labour.

Not only do both countries differ but both goods differ as well, one good, in our case fish, is capital-intensive to produce which means it needs more capital per labour and the other good, oil, is more labour intensive, it needs more labour per machine.

One country, in our example Dijob, is labour-abundant, which means it has more labour relative to capital than the other country. The VL is capital-abundant which means it has more capital relative to labour. It is important to understand that abundancies of a factor are always in relative terms. In absolute terms Dijob can have more capital and labour than the VL. But it would still be labour-abundant if it has a higher worker to capital ratio then the VL.

Being the labour-abundant country, Dijob can produce more cooking oil than the VL but less fish. Therefore, the relative price for oil is lower in Dijob than in the VL. In the VL the relative price of fish is lower than in Dijob as the VL can produce more fish than Dijob due to its capital-abundancy, but less cooking oil.

Under autarky both countries could only consume what they produce and can not take advantage of the cheaper goods available abroad. Once again, the governments of both countries realise this and open up to trade. Goods can be traded without any barriers between both countries.

Applying the same mechanism as in the specific-factor model, prices will converge to become the same (except for transport cost). Due to a price increase in fish from the VL's perspective, it will start exporting fish and Dijob will start exporting oil. This is known as the Heckscher-Ohlin theorem, which says in much generality: A country will export the good whose factor it has in abundance and import the good whose factor is scarce.

One important aspect of the Heckscher-Ohlin model is that, compared to the other models reviewed so far, there is no complete specialisation. This is due to a phenomenon called increasing opportunity cost. This concept can be a bit confusing at first. But it becomes fairly obvious once studied detail. It is a more realistic assumption than the constant opportunity costs that were assumed so far.

The VL is relatively capital-abundant: it has relatively more capital than labour. If the VL wants to increase the production of fish, it will need more capital or labour to do so. We only have two sectors, the fish producing sector and the cooking oil producing sector. In order to increase fish production, the fish pro-

ducing sector needs to poach factors of production from the oil producing sector.

The cooking oil producing sector relies more on labour than on capital. Hence, it will first let some capital go. The newly acquired capital, which is relatively important for the fish production, will increase the output of the fish industry by a lot whereas the oil production will only contract a little as a result of its stronger reliance on labour.

But the more the VL wants to increase its fish production, the more capital has to flow from the oil sector to the fish sector. At some point the fish sector also needs to employ labour from the oil sector. Since labour is much more important for oil production, its production will decline more strongly than the gain in fishing. Therefore, the opportunity cost of producing fish increases the more fish is produced. Consequently, at some point the opportunity cost to produce one more barrel of fish is greater than the world market price. Then production will no longer expand, resulting in incomplete specialization. The cooking oil sector survives though at a small scale.

3.7 International trade and its consequences

The Heckscher-Ohlin model has much more potential. And myriad of economists have expanded the model, formulated new results and further improved the understanding the impact of trade.

The first theorem was developed by Tadeusz Rybczynski. It states that, with constant prices, an increase in one of the two factors results in an increase in the production of the good that uses this factor relatively intensively. Output of the other product decreases. This is important as it says that if the available amount of labour increases in Dijob, the amount of cooking oil produced increases and the amount of fish produced decreases.

Another important result was obtained by Paul Samuelson and Wolfgang Stolper. It touches the sensible subject of how wages change in response to changes in the relative price of goods through trade. To summarise, free trade results in an increase in the price of the good that uses the abundant factor intensively in its production and a decrease in the price of the product uses the scarce factor in its production.

Real earnings will increase with a relative price increase (and decreases with a relative price decrease), in order to keep employed the scarce factor whether it be labour, or capital must take cuts in compensation, in the case of capital the return on investment decreases, for labour wages fall or for land rent decreases. As a result, the Stolper-Samuelson theorem might be used as an argument to oppose free trade, but it is important to keep in mind that the society as a whole gains more from trade than

certain groups lose.

Finally, the one of the most controversial findings is called Factor price equalization theorem under this theorem free trade leads to equalization of factor prices (in the Heckscher-Ohlin model this is capital and labour). So initially labour is cheap in the labour abundant country and capital is cheaper in the capital abundant country. Trade will lead to convergence of prices so that the price for labour, which is the wage paid to employees in both countries is the same.

This would imply that competition with low wage countries decreases the wage in high-wage countries. However, for this result to hold all assumptions of the Heckscher-Ohlin model have to hold perfectly. But as we know, this is very unlikely.

Nonetheless Dan Ben-David demonstrated that there was a convergence of income in Western Europe after the European Union was formed. It is important to keep in mind that most countries have been developed countries and that had roughly the similar technology available. More recent studies about convergence, do not show such a clear convergence between countries.

The Heckscher-Ohlin model is a useful tool to analyse trade and the impact of trade. In comparison to the specific factor model it predicts the winners and losers much more clearly. Winners are those possessing the abundant factor and losers are those possessing the scarce factor in a country. As a result, worker in the export industry, which is the abundant industry should favour free trade and workers in the import industry should oppose it. Later in the book we will focus more on this hypothesis and other explanations what explains opinions on free trade. There is empirical evidence that workers are either favouring or opposing free trade according to their long run earning potential.

In 1953 the economist Wassily Leontief applied the Heckscher-Ohlin model to the U.S. He used data on capital and labour for the year 1947. He estimated that the U.S. was capital-abundant compared to the rest of the world. Therefore it should export capital-intensive goods and import labour-intensive goods. However, the data actually showed that the U.S. was exporting labour-intensive goods and imported capital-intensive goods.

This was known as Leontief's paradox.

What was missing was the distinction between skilled and unskilled labour. The U.S. was actually a exporter in labour-intensive goods produced by skilled labour as well of agricultural products which are labour abundant and land abundant.

3.8 New trade theory

All trade models so far predicted a high degree of specialisation in all sectors whose goods are exported. Countries would not trade the same

good with each other. Yet we observe exactly such a pattern in the real world. Germany exports cars to Japan and imports cars from Japan. Although prices differ there is no specialisation which would result in either Germany or Japan being the sole exporter of cars. A puzzle.

It was solved by new trade theory. The word new might be a bit misleading. The theory was developed mostly in the 1980s, almost 40 years ago. Back then it was new and breath taking. For the first time a model said products can be differentiated and thus explain why countries not only trade with each other but why there is so much intra-industry trade happening.

Intra-industry trade refers to the practice that countries trade with each other in the same industry, for example cars. This is especially important for developed countries. Most of the worldwide trade is between developed countries and most of this trade is intra industry-trade.

In all the models up to now the two goods did not differ in quality or type. Every drum of cooking oil was identical, and every barrel of fish the same as the other. Now producers can differentiate their products. Cooking oil might be organic and come in different qualities. The same for fish, farmed or caught in the high seas. Producers gain the power to influence the price they can charge their customers.

Previously we always assumed the price of a good is equal to its relative cost. With differentiated products, superior products can come with a higher price tag than a similar but lower-quality item.

There are a few additional assumptions need to make the model work.

Although producers can differentiate their products, they cannot change any price because there are many other firms competing. This assumption is fairly realistic. Think of Kellogg's, one of the most famous brands in the cereal business. Due to their strong brand, they can charge higher prices than other producers. Kellogg's differentiated their product. However, they cannot increase their price indefinitely. At some point consumers would switch to cereals from other brands.

Another assumption is that with higher output, the average cost per good produced falls. If a machine or a factory needs to be installed, then with more units produced, this fixed cost can be spread and thus the cost per unit produced fall s. Economist use the term increasing returns to scale to describe such a feature. Let us illustrate this with the help of an example. Imagine you own a factory that produces chairs. Your first customer orders a chair, in order to produce that chair you have to come up with the design, source the materials and ge the required tools, which are fixed costs. The next time a customer orders a chair, you already have a blueprint and you know where to get the required materials and you

already have the required toosl for production, hence your only effort for this order is to produce the chair. As can be easily seen the effort you put in the second order is much less and hence you have to spend less time and money on producing it. Your costs fall with increased production, hence increasing returns to scale.

As with all models before we have two countries, the VL and Dijob, which produce two goods, fish and cooking oil. This time we are assuming that both countries are completely identical, this means according to our previous models they do not have any reason to trade. Before the governments allow international trade, each firm has only its home market to sell its products. Therefore, firms can not fully take advantage of economies of scale. Consumers choice is limited by the number of firms within a country.

If the governments decide to remove all barriers to trade and allow the free flow of goods across its borders, companies will start exporting and competing with companies from the other country. Producers will try to expand their market share and to take advantage of increasing returns to scale. Consumers now face increased variety of goods to choose from which means their demand becomes more sensitive to prices of the goods. Elastic in economic terms.

In our example, consumers have now a wider variety of different cooking oils to buy. In order to grow their market share, producers have to lower their price. This will result in more sales. Although cooking oil can be differentiated, consumers can substitute between these. (At least to a certain extent.) So if one company lower price, others will have to follow. Otherwise, they lose market share and cannot profit from increasing returns to scale.

Some companies may have to close down. If a producer is much less efficient than its competitors (maybe due to poor management or insufficient investment in the past), it makes losses on each unit produced if the market price is low. Competitors will take its share of the market.

Even with fewer companies, consumers can have an increased variety at lower prices compared to no trade because they can now shop on the world market.

The model leads to some interesting conclusions. Trade continues to generate winners and losers. Especially in the short run, there are can be immense adjustment cost. One is loss of wages as workers are laid off because unproductive firms go out of business. In the long run those costs are offset because factors of production can move freely and can adjust. People who become unemployed initially can find new jobs. Capital can be used somewhere more productive.

Is this only theory or is there empirical evidence to back up these claims?

Daniel Trefler analysed the effects of opening trade between the U.S. and Canada through CUFTA

and later through NAFTA. He found that overall productivity increased. He also noted that sectors that were protected suffered from lower competitiveness and, as a result, suffered the most from opening to trade. However, competitive firms' output soared, and they employed more people to satisfy the increased demand for their goods.

Further studies found that the increase in the variety of goods resulted in substantial savings for consumers making them better off than before.

In the long run the gains from trade seem to outweigh the cost. Although it is important to keep in mind that an economy consists of many different individuals and not all of them gain from trade.

3.9 Literature

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3.2. Readers who wonder how these names are made up may want to ask HAL 2000, the super-computer in the movie Space Odyssey.

3.3. For the reader who might be wondering what exactly opportunity costs are: Opportunity cost is the same as the relative price of a good. The relative price of good shows how much of one good I have to give up to obtain one additional unit of another good.

Why can't John only pay me £10 or £10.01 this way he would end up even better? For £10 I could participate in behavioural experiments in the University and John could not be sure whether I will do his dishes or decide to work for the University. If John pays £10.01 although I am bet-

ter off and should take it the incentive to take it is very low as I am slightly better off, due to non-monetary reasons I could still choose to work for the University. Only if John incentives me enough he can be sure that I am doing the dishes for him.

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4 Trade & Everything Else

We now know why people trade and what economic models have to say about trade and its effects. We also learned that views about trade can differ starkly, depending on your circumstances and education. The innate fear of free trade seems almost as strong as the innate propensity to barter.

Many seem to believe that trade is a zero-sum game: 'We' win what 'they' lose; therefore trade must be responsible for growing poverty and inequality worldwide. Many climate activists fear that trade is one of main culprits of climate change and species extinction.

Workers in developed countries fear "unfair" competition from low wage countries that destroy their jobs. "Back then everything was better, less trade, less competition and more job security" can be heard in discussions, talk shows and political events alike. Even white-collar workers are becoming more critical of free trade.

Outsourcing services to low-wage countries such as India, threatens the jobs of workers with university degrees. Politicians promise different trade policies to win votes. The 2016 American election was also fought over the issue whether the U.S. lost to its international competitors and whether tariff protection can "make America great again".

Trade seems to be blamed for almost every social issue on this planet. However, many anti-trade actionists forget that trade is about the exchange of goods and not about freeing capital flows, unfettered capitalism or, as Bhagwati put it beautifully, "for free whatever". Being critical about the globalization does not necessarily imply being critical about trade, trade is only one part of globalization.

This chapter covers many social issues where trade is deemed to be responsible for their occurrence and seeks to clarify to what extent trade can really be blamed.

4.1 Low wage competition

One of the basic arguments for protection goes as follows: Low-wage countries steal our jobs. To complete, we need to lower our wages; therefore, we need protection. The logic behind that argument seems persuasive. Due to the increased competition from low-wage countries, workers in developed countries must accept cuts in wages to prevent companies from leaving. Or because other countries offer lower wages, companies move their production abroad and the jobs are lost. Either way, foreign competition is to be blamed.

Another popular argument is based on the lower labour standards that many low-wage countries have.

It is often seen as an "unfair" advantage for developing countries that leads to the loss of "honest" and "hard working" jobs.

All arguments intuitively make sense. There so many anecdotal stories about how people lost their job to trade. For example, I (Levi) had a summer job in a factory in Germany that was slowly moving production to Poland. The lower wages paid there were surely one of the main reasons to move production abroad. Many people in that factory feared to be laid off, and it was the competition of low wage countries that led to the destruction of their jobs.

However, there was one interesting anomaly, most people did not complaint about trade. This is strange because trade seems to be the obvious reason why jobs got relocated. Free trade makes is possible that parts can be produced in Poland and then shipped back to Germany to be assembled here. If there were high tariffs between Germany and Poland, those job would have not been moved to Poland.

Most of my co-workers seemed to know that it was trade that led to their jobs in the first place. Our products were shipped to customers all over the world, and the jobs that were outsourced to Poland were mostly of unskilled nature. While I was there, the company even extended their plant due to increased specialisation. For me that was of course bad news, I knew that in the near future they would no longer hire students because all the work would need specially trained workers.

This anecdote illustrates beautifully both sides of the story of trade. Trade leads not to the destruction or creation of jobs – a common misconception about trade. But trade leads to a redistribution of jobs. Every student of economics knows that employment depends on macroeconomics factors. In the short run, aggregate demand determines unemployment and, in the long run, the natural rate of unemployment is the driving force behind the employment rate. Microeconomic policy tools such as , tariffs, quotas etc have little net effects on the number of jobs in an economy.

4.2 Efficiency gains

What trade does, however, is redistributing jobs away from inefficient industries to more efficient industries. Trade leads to an increase in competition. Formerly sheltered companies now face competition from foreign firms who also want to sell their products.

This is generally good news for consumers. Falling prices due to increased competition and more choice of products. For firms competing with these imports, increased competition is bad news. Market share declines and profit margins shrink. Either firms innovate and become more efficient or they go out of business and make space for more efficient firms.

This sounds appealing in theory.

Luckily there is evidence supporting this hypothesis. Daniel Trefler examined the effect of the Canadian-U.S. Free Trade Agreement (FTA) and found compelling evidence that trade led to increased productivity in the long-run. This is good news for consumers and efficient producers.

However, the paper uncovered another important aspect of trade. And these findings are bad news for workers and inefficient producers that have to close down and have to lay off workers. As a result of the Canada-U.S. trade agreement, employment in manufacturing fell by 5%. In industries that relied the most on protection, employment dropped by 12%.

However, within 10 years the lost jobs have been made up by employment gains in other sectors of the economy. Trefler further argues that the FTA most likely led to an overall welfare improvement.

4.3 Productivity & wages

Nevertheless, it is hard to argue for trade when considering individual hardship. We know that overall gains from trade could be redistributed to make everyone else better off. But that it is almost impossible to do in practice. Arguing that trade is good for a nation and its people only looking at aggregate gains is problematic; it does neglect the hardship faced by many workers that are displaced.

Another study shows that Mexican firms increased in productivity as well as a result of NAFTA, especially firms in the exporting sector increased productivity by 45% from 1994 – 2003.

There is another reason why productivity gains are important. Economic theory predicts that if productivity increases, wages increase as well. This is important to keep in mind. Often foes of trade argue that developing countries will pair their low wages with increasing productivity and consequently reduce our living standards.

This assumption, as so many that are presented in order to discredit trade, are very compelling. They seem to make sense and paint a clear picture of good and evil. The only problem is that empirical evidence says otherwise.

The Nobel prize laureate Paul Krugman stated: "Economic history offers no example of a country that experienced long-term productivity growth without a roughly equal rise in wages".

This can be best illustrated by looking at China. China's productivity is growing continuously. Its growth rate averages 7.41% between 1953 and 2018. At the same time, China's wages are growing rapidly as well. On average 8.2% between 2008 and 2017.

A result of this trend is that, for example, production in the apparel and footwear industry is moving from China to countries such as Vietnam and Cambodia that pay lower wages.

This spiral of increasing productivity and wages is nothing extraor-

dinary. It was the same for South Korea. In the 1980s Nike produced about two-thirds of its footwear in South Korea. As productivity rose in South Korea and with it the wages, Nike moved its production to other, lower wage countries.

4.4 Wage stagnation

However, in recent years wage growth has stagnated or has grown very moderately. Surely it should be possible to blame trade for that. We already know from the trade model discussed in an earlier chapter that some people lose out on trade; and that Daniel Trefler's survey showed that industries that rely on protection were obliterated. Dani Rodrik correctly points out that trade is bad news for workers that are not very mobile, have little education and are have low skills.

Income inequality rose especially in respect to education. Often wages for workers with a university degree increased, while wages for workers without any higher education fell. Iin the U.S., wages for workers without a university degree fell by 20% between the 1970s and 1990s while productivity soared. However, research suggests that trade is not the main foe of working-class people. But that technological change is.

Technological change is one of the main reasons for current labour layoffs. Most importantly it is mostly technological progress that depresses the wages of low-skilled workers and increases the income inequality between skilled and unskilled workers. Technological progress reduced the demand for low-skilled labour, and reduced demand means reduced compensation in form of wages for workers.

Besides technological advances, another important aspect changed the demand for labour in manufacturing: consumption patterns in most developed countries. People started spending more money on services than on goods. As a result, less labour is required to produce goods and more is needed to provide these services.

If competition forces a company to either decrease wages or cut employment and modernise, the company is more likely to cut employment. There is a simple but persuasive logic behind that argument. If the company would cut their wages, the most productive worker would leave, and the company would be left with unproductive workers that cannot find a job anywhere else.

By cutting the workforce and replacing the unproductive workers by machines, the company is becoming more productive. So job losses rather than a race to the bottom when it comes to wages is more likely.

4.5 Superstars

Last but not least the superstar effect and technology. In 1981 Sherwin Rose, an economist from the University of Chicago, published an influ-

ential paper entitled "The Economics of Superstars". He argued that there are a few, especially gifted people who, thanks to technology, are now able to realize much larger gains from their skills than ever before.

Take for example Leonardo DiCaprio, a famous actor. Now imagine he lived before the invention of television. No matter how famous he would have been in those days, he could never have reached the hundreds of millions of people he does today. All with the help of television, cinema and streaming.

4.6 Inequality

Trade is not the main culprit behind increasing inequality. Increase in income inequality can be explained largely by technological changes. Why wealth inequality increases is still a hotly debated topic in the economics profession.

Turning away from technology to the jobs trade "destroys". People that are displaced due to trade are in general less educated, have a longer tenure and belong more often to a minority group than workers that are displaced in non-manufacturing sectors.

Although the same characteristics hold true for most displaced manufacturing workers, workers being displaced by trade are more likely to be female. Additionally, most manufacturing workers that lose their jobs to imports suffer from earning loses once they find new jobs. The longer their previous employment lasted, the greater the drop in their earnings. And although many are able to find a job in the same industry, they rarely find jobs in the export industry. These workers are vulnerable to continuous displacement due to trade.

After reading the previous paragraphs, it could be argued that protection is good and necessary because it saves the jobs of these workers that are already having a more difficult time; both in terms of wage pressure and the difficulty in find new jobs. But exactly there lies the problem, it is not trade that is responsible for these bleak statistics. Being less educated, belonging to a minority group and being female already makes it harder on the employment market, trade cannot and does not change these underlying causes.

As Jagdish Bhagwati said "you cannot kill two birds with one stone". Jobs being displaced by trade and domestic problems, such as the disadvantage in the job markets for minorities, less educated people and women discussed above, are two completely different problems. Therefore, they require two different sets of policy interventions. Trade cannot solve all problems in the same way that a single stone cannot kill two birds.

4.7 Cost of saving jobs

For a moment let us assume that the government decides to protect a certain industry with the prospect

of saving jobs. U.S. president Donald Trump recently imposed tariffs on steel and washing machines, to cite but two examples. Although it is correct that jobs were saved in both industries and new jobs were created, the cost of these jobs is enormous. For every additional job created in the steel industry through protection, steel users will pay an extra $650,000 due to increased prices. Trump's Tariff on Washing Machines was an equally bad deal for consumers, costing consumers roughly $820,000 per job created.

There are countless more examples, past and present, that jobs saved and created through protection are expensive for consumers. For example, a study in 1994 found that protectionism cost the American consumer $170,000 on average per saved job. Therefore, it is not a new observation that jobs saved by protection are expensive affairs.

4.8 Labour conditions

Jobs saved by protectionism might be expensive but what if those jobs are saved because protection is put in place to prevent "unfair" competition from developing countries due to horrendous labour conditions?

In 2012 a fire at one of the many Bangladesh garment factories killed over 100 people, due to lack of safety standards. After events like this, there is often a call for trade sanctions on grounds of low labour standards abroad. Low wages is then thrown in as an additional argument. But most of the differences in wages between developing and developed countries can be explained by differences in productivity. Workers are much less productive. Although average wages are lower in these countries, most foreign firms pay substantially higher wages than their competitors.

There is little evidence to support the claim that trade erodes labour standards globally. Quite to the contrary. Studies often find that trade increases labour standards worldwide. Although sweatshops are far from perfect and the conditions are often far below those in developed countries, they only exist due to a lack of other employment forms. Efforts to stop imports from sweatshops therefore can destroy the livelihood of many people who depend on this job.

4.9 Child labour

Another issue that is often raised when talking about sweatshops is the issue of child labour. Current ILO estimates suggest that over 150 million children are in labour and of those over 50% are working under hazardous conditions. These numbers are horrifying, and virtually everyone would argue that this problem needs to be addressed. But would imposing a ban on child labour products really help?

In 1992 the American Senator Tom Harkin first proposed the so-called "U.S. Child Labor Deterrence Act". It would have banned all im-

ports from textiles using child labour. In response to this bill, approximately 50,000 children lost their job in Bangladesh. To assume that hese children would now be free to attend school is naive. The bill drove children into worse jobs and sometimes even prostitution.

Banning child labour does not seem to solve the problem. On the contrary, trade seems to have a positive impact on fighting child labour.

The main reason for child labour is not trade but poverty. In order to eradicate child labour, we have to eradicate poverty. Most developed countries had child labour in the past. In England children were working in the mines until the mid-19th century. The argument that current trade and outsourcing is the reason for child labour is misleading.

A study using data from Vietnam tells an interesting story. During the period 1993 – 1998 the price of rice increased by 29% on average. Partially due to the relaxation of the rice export quota. As a result, parents who experienced an increase in their income could afford sending their children to school.

Another reason why child labour occurs is that parents are restricted in their ability to make up for the lost income when sending their children to school. They are poor, therefore need the money the children bring home. If parents could borrow money to send their children to school, they might. But poor families often have no access to credit. A study of poor families in Tanzania supports this view.

Fighting child labour means fighting poverty. Neither of both can be achieved with protection.

4.10 Downstream

George Santayana proclaimed: "Those who cannot remember the past are condemned to repeat it." When it comes to trade and protection, the cost to consumers is often forgotten.

Besides the high cost to consumers, protection can destroy jobs in other parts of the industry. The steel industry, which produces important intermediate goods for many products, is a particular striking example.

Trump's tariff on steel, while it does protect jobs in the steel industry, jeopardizes jobs in industries that use steel ("downstream industries" in economic jargon). Rising prices for steel could make the products of steel-users too expensive to be competitive on the world market. Jobs in these industries outnumber jobs in the steel industry by 80 to 1.

U.S. sugar protection entails sugar prices that are two times higher than world market prices. A good reason for food-processing industries that use sugar, to move across U.S. borders.

Removing the protection of the sugar industry is estimated to create between 17,000 and 20,000 new jobs in the food processing sector. These new jobs come at the expense of a

drop of employment of 4.2% in the sugar sector. A net gain of more than 15,000 jobs.

History is littered with trade restrictions that harmed downstream industries. Duties on LCD panels. Price floors on Japanese DRAM semiconductor production. U.S. downstream producers went abroad in order to take advantage of lower world market prices.

4.11 Unemployment

Unemployment has detrimental effects on psychological as well as physical health. And it increases the incidence of suicide. Unemployment lowers life satisfaction more than any other single characteristic such as divorce.

Although we have established that domestic policy changes are needed to ensure a well-functioning job market, protection can save jobs. Telling unemployed people that their unemployment is for the greater good because the economy as a whole is better off, will not go down well. Beside lowering the living standard, being unemployed also affects the children and partner.

A recent study found that having unemployed parents decreases life satisfaction of children in their later life. Furthermore, unemployment is linked to a decline in children's happiness, which can be directly linked to poorer school achievements and a higher probability of child neglect.

Children of parents with low education are particularly hard hit. Their parents are more likely to be displaced by trade and having parents with low education already puts you at a disadvantage.

The cost-benefit analysis of trade could very well be reversed. More research is needed to find efficient ways how distribute the gains from trade so that current "losers" stop being losers.

4.12 Households

While protection imposes a high cost on consumers, on the household level the cost often is negligible. Take the sugar protection. Estimates say that liberalizing the sugar protection would increase consumer welfare by $342.7 million. Clearly a lot of money. Nevertheless, the average household in the U.S. forgoes approximately $2.88 in welfare gains from sugar protection. Per year. This number increases to $27.80 per year if one could buy sugar at the lower world market prices.

Is a saving of this magnitude really substantial enough to justify the disastrous blow dealt to existing workers and their families?

Weighing the pros and cons of trade and its myriad direct and indirect effects in more detail would fill a book. Just as a final remark consider that trade protection often favours industries of the past and that free trade moves the economy towards new and more efficient industries. Transitions, although painful,

are often necessary to allow a country to move towards a better future.

4.13 Climate change

Moving away from trade and jobs to something everybody should worry about: climate change. Even if you believe your job will never be affected by trade or if your job depends on exporting and therefore you are in favour of free trade.

One of the biggest fears of many climate activists is that of a different race to the bottom: production moving to countries that have much less stringent environmental regulations. Pollution havens in other words. To compete, countries will have to lower its environmental regulations. The race to the bottom.

As compelling as this sounds, there is not much evidence supporting the claim that "dirty" industries move to countries with laxer environmental standards. Environmental standards are a cost factor but, compared to lower wages, the pull-factor of low environmental standards seems almost negligible.

Demands for high environmental standards are often disguised demand for protection by industries or interest groups that see their product lose market shares to increased competition from developing countries. Indeed, unions and NGOs in less developed countries are often opposed to include such propositions in trade agreements

The next section deals more closely with the issue of special interest groups and protectionism.

There are many examples showing that protectionism is often detrimental for the environment. Three of the most prominent examples are highlighted: the voluntary export restraint (VER) of Japanese car producers, the U.S. agricultural protection and subsidy, and the protection of U.S. and European producers of solar panels.

In 1981 Japan agreed to constrain their exports of cars to the U.S. There were two notable results. The first is that prices for Japanese cars increased. But, more importantly, Japan exported larger cars that used more gas (petrol) than the smaller and more fuel-efficient cars it mostly exported before the quota was introduced.

Overall the voluntary export constraint was a huge disappointment. Not only did economic welfare decrease but the environment suffered as well.

To protect the U.S. sugar growers, the U.S. imposed a sugar quota as discussed in the previous section. To the negative effects of this quota on jobs and consumers, we can now add harming the environment.

Rather than using sugar to produce ethanol, corn is used. But corn is 7 times less efficient than sugar cane. Corn production in the U.S. is requires large amounts of water and fertilizer. Sugar cane production in Brazil relies on rain and uses only small amounts of fertilizer.

To encourage domestic production, the U.S. government grants tax credits to ethanol producers. At the same time it imposes high import tariffs to prevent imports of cheaper sugar-based ethanol. Abolishing the sugar subsidy and the import restrictions would help the environment.

Last but not least the U.S. as well as the EU tried to protect their domestic solar panel production against imports from China. The U.S. imposed a tariff, and the EU relied on "voluntary" constraint. But the effect was the same. Prices of solar panels increased. Installation of panels in private households as well as businesses became more expensive. With fewer panels installed, the result of protection has been to damage the environment as well as to harm consumers.

4.14 Trade can harm

There are examples where trade harmed the environment. For example, overfishing. Without international markets that allowed their sale, overfishing would probably not have happened.

In the 1980s the rapid expansion of coastal shrimp-farming in Asia and Latin America harmed the environment. It used large quantities of fresh water which resulted in the contamination of fresh water with salt water. Ultimately this damaged the mangrove forests that are the natural habitat for wild shrimp and fish, resulting in the loss of livelihood for other fishermen.

Agricultural protection in Europe does not only make European consumers pay high prices but it excludes people from poor countries to sell their produce. The environment suffers since much larger quantities of pesticides are required than under free trade. EU agricultural subsidies can be described in a few short words: higher subsidy = more pesticides used.

That pesticides are necessary to produce enough food for the current world population is a myth, debunked in a 2017 UN report. The report also finds that there are an estimated 200,000 deaths each year due to poisoning from pesticides. Most of these deaths occur in developing countries where regulation is often lax.

Any measure that moves production away from heavy pesticide users and improves handling of pesticides in developing countries will be beneficial for the environment. The EU slashed their protection would be a first step.

Another study found that certain types of pesticides (neonicotinoid insecticides) are harmful to bees. Assuming that using pesticides that passed all the required tests are environmentally benign when used on an industrial scale is certainly naive. Although the new Common Agricultural Policy (CAP) is supposed to be greener, it is unlikely to benefit biodiversity in the EU. A study conducted by the EU itself, finds that some measures of the CAP can have negative

environmental impact.

Besides the negative environmentally impact, EU agriculture protection continues to hurt the most vulnerable: farmers in developing countries. Despite reduced subsidies and lower average tariffs, the EU's agricultural market is still highly exclusive. Less developed countries outside the EU are effectively cut off from one of the biggest agricultural markets.

Furthermore, due to overproduction in the EU, it became a exporter of food. Selling large quantities of subsidised food on the international market, directly competing with developing countries and their farmers.

The U.S., which also has a highly protected agricultural sector (although less subsidised), has its fair share of scandals. For example, intensive farming in South Florida is damaging the Everglades's unique ecosystem.

Protecting the agricultural sector in developed countries has detrimental effects on the environment and farmers in developing countries. Furthermore, it creates inequality with the highest subsidies going to large farms or large landholders.

4.15 Buying local?

Do you believe buying local farm produce is better for the environment than buying thos imported from abroad? Surely the little farm just outside the town must be better for the environment as it does not have to ship its produce around the world.

This reasoning is not entirely accurate. Transporting goods around the world is, perhaps surprisingly, not as damaging as one might suspect. And 80% of the emissions caused by food are in the production phase. Transportation is only responsible for 11% of emissions. Getting the food from the producer to the retailer represents only 4% of total emissions.

Buying local also ignores other factors such as the land use, the type of transportation, weather or even seasons. For example, New Yorkers drinking wine from Bordeaux harm the environment less than those drinking Californian wine. Why? Because transport by ship is less poluting than transporting by truck.

Another example are dairy, lamb and apples from New Zealand. Putting these on the table of a UK consumer has less environmental impact than the same products produced in the UK. Transporting goods around the world is often better for the environment than producing it locally. Even roses that are flown in by air from Kenya cause less environmental impact than those that are grown in the Netherlands and then shipped to the UK. Dutch growers use vastly more energy for heating and lighting to cultivate roses.

These results illustrate that it is often more important to consider under what conditions a good is produced than where it is produced.

Transporting goods by trucks over long distance can be worse than send

it around the world by ship.

If you want to reduce your environmental footprint, forget about buying local. Shift your consumption to chicken, fish, eggs or vegetable-based diets. And buy less red meat and dairy products. This really has an impact on reducing greenhouse gas emissions.

4.16 Eat kangaroos

The authors of SuperFreakonomics, Steve Levitt and Steph Dubner, recommend the consumption of Kangaroo meat rather than red meat. Kangaroos allegedly produce very little methane when farting.

Although recent research has revealed that Kangaroo farts do contain a substantial amount of methane, it is around a third to a quarter of the levels produced by cows (who burp).

Methane is harmful to the environment and one of the biggest issues with red meat production. Australia is experiencing an overpopulation of Kangaroos, putting its biodiversity at danger. Consuming Kangaroo meat would not only help Australia, it would also help he environment. Give it a try.

4.17 Politics

Protectionism is often pushed by special interest groups, unions claiming they care about the environment and the working standards in low-wage country. Restrictions ultimately serve to protect their members' jobs. Industries that lose competitiveness also try to get protection. Although protectionism often carries a high cost for consumers, there is very little protest from this group.

Further trade liberalization in developed countries would have surprisingly small welfare effects. In the U.S. the average import tariff is only 1.5% (prior to the 2018/9 trade war). Abolishing all significant trade barriers is estimated to increase national expenditure by $3.3 billion per year. This equate a welfare gain of 0.02% of GDP.

Considering the small effects on the economy overall and the large effects on affected workers, those that stand to lose from trade are fiercely opposed to any trade liberalization that puts their livelihood at risk while consumers and tax payers care much less.

In political sciences researchers often apply the median voter model. It says that the actual policy in a country represents the preferences of the median voter. Although often criticised, there is empirical evidence that it is still a good foundation to explore decision making in politics.

According to this model, policies that hurt the majority and benefit few are not possible to implement, simply because politicians w1ant to be re-elected. Ignoring the majority will make winning the next election less likely.

In the U.S., just like the sugar industry, the dairy industry and the textiles and apparel sector are also

highly protected. The protection benefits few - workers in these sectors. But it hurts the vast majority of consumers as a result of higher prices.

How can this happen? It should not according to the mean voter model as politicians keep policies that are hurting the majority.

The American economist Mancur Olson presented the answer to this problem in his book "The Logic of Collective action": Larger groups face greater difficulty in organizing their members to come together and take collective actions. Smaller groups do not face the same problem. As a result their interests can be overrepresented.

How does this apply to trade? Imagine Jane, a fictitious American consumer, reads the previous pages and concludes that sugar subsidies should be abolished. She writes an email to her congresswoman. The congresswoman listens, takes action, and the subsidies are abolished. All consumers benefit from lower sugar prices, not only Jane who wrote the letter.

This is a typical case of a public good. Although not everybody contributed to the outcome, all benefit. All but Jane had a free ride. Individuals therefore have little incentive to participate in a collective action. This free-rider problem is essential to understanding trade policy.

One letter from Jane is unlikely to have the desired effect. Jane knows that. A single household's gain from trade liberalization in the sugar sector is approximately equal to $2.88 per year. Would you write a letter that is unlikely to even achieve this minor saving? However, you would write a letter if your job depends on it.

That is what is happening in trade policy. Agriculture is protected in most developing countries despite employing only a small fraction of people in those countries. But because agriculture is such a small group, it can easily activate its members and lobby more successfully for protection.

Economists have studied this topic in much detail. There is staggering evidence that special interest groups have tremendous influence on politicians' actions and can affect the outcomes of political decision making. Scott Bradford finds that U.S. policy makers weighh a dollar in campaign contribution 15% higher than a dollar of consumer surplus.

Protected industries have much to lose, whereas consumers gain only little. Lobbying their representatives to keep protection in place and spending huge amount of money to get their voice heard makes sense. Consumers are much less willing to lobby and take collective action. No wonder protection persists and free trade is often not to be found.

4.18 Dumping

Current tools to shield industries from harmful competition include anti-dumping duties. These du-

ties are levied on products that are "dumped" by foreign producers on our market. That is, the price is below that of the product's market price in the exporter's country.

Evidence suggests that over time legislation has made it easier to claim protection from dumping. Most anti-dumping legislation is protection in disguise. It has nothing to do with making trade "fair".

Stopping dumping reduces imports and raises prices. Producers have a clear incentive to blame foreign firms of dumping whether there is proof or not. A measure created to ensure fair competition, can get hijacked and becomes a tool for protection.

4.19 Sunset clause

Once policies are in place, they are hard to revise or abolish. Either would mean taking away benefits from those who, ehm, benefit. Anti-dumping legislation did not get repealed but became more detrimental to foreign competitors.

During the Korean war, mohair goats were produced as their wool was useful in making warm uniforms. After the war the protection was kept for another 40 years despite no reason whatsoever to keep it in place.

4.20 Uncertain benefits

Freeing trade comes with a lot of uncertainty. Spotting the future winners from free trade is hard. But protected industries know exactly what they stand to lose. No wonder policy makers suffer from a status quo bias.

Dani Rodrik illustrates this uncertainty and the resulting effect on policy very nicely in one of his papers. Imagine a economy with 100 voters. A policy reform would increase the incomes of 51 voters by \$5 each. But it would decrease the income of the others by \$1 each. So the policy would have a net gain of (51 x \$5) – (49 x \$1) =\$206.

The 49 voters know for sure that they will lose but the 51 others do not know whether they will gain or lose from the policy. The 49 losers will vote against the policy and some of the others will do so as well. A beneficial policy is rejected.

Another interesting finding by Dani Rodrik is that countries that are more exposed to trade also have higher governmental spending. Increased spending by governments provides better social insurance to support those who lose from more openness. In Europe people that lose out from international trade are more likely to vote for parties that offer generous social programmes.

To help reducing the negative impact of international trade, the U.S. have a special policy tool called the Trade Adjustment Assistance (TAA). The EU has the European Globalization Adjustment Fund (EGF) in place.

The efficiency of such programmes is unclear. In principle, paying unemployment benefits for a longer period

does increase the probability of getting a better job or a job that matches the particular skill set. But TAA in the U.S. has not yet proven to have a positive impact on the employment outcomes of participants. The EGF is underused and seems to have had only limited success in combating the adverse outcomes from globalization.

4.21 Jobs and jobs

Increasing governmental spending to soften the adverse effects from trade suggests that jobs lost due to international trade are somehow different to jobs lost due to other factors. Whether the workers agree is doubtful.

4.22 Globalisation

Often people fear with increasing trade liberalization their home country loses its sovereignty and becomes subject to universal rules. This does not happen. Even within a customs union (like the EU single market) countries can design their own social policies and maintain different institutions and laws.

In fact borders are still a quite important obstacle to trade. Although trade agreements often abolish most formal trade barriers such as tariffs and quotas, these agreements do not render borders obsolete. John McCallum found that trade between the U.S. and Canada, despite being virtually free of most trade barriers, is still less than trade within Canada itself. The U.S.-Canadian orders still has a decisive effect on trade patterns.

Even within the EU single market, trade patterns are not entirely free of the influence of national borders. The world is not as integrated as one might think seeing the abundance of international goods in a supermarket.

If you have not yet be at least a little bit more positive about international trade, there are some interesting insights that should convince you that you should become a fan. Trade deters conflicts and promotes peace. Trade is linked to increasing democratization.

Both results show that trade can be much more than the exchange of goods and services, trade can be a force promoting peace and democracy.

4.23 Behavioural biases

Behavioural economics research indicates that human nature can hinder trade. One such example is known as the endowment effect. The endowment effect is that we value things that we own more than things that we do not own.

This can lead to some interesting conclusions. We are more likely to keep an object than to acquire the same object if we do not own it. It will also lead to difficulties selling some items, as we value our item at a higher price than what our buyer is willing to pay. This principle has even been observed in Ancient times by

Aristotle: "For most things are differently valued by those who have them and by those who wish to get them: what belongs to us, and what we give away, always seems very precious to us." However, as we have seen throughout this report, trade is happening.

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Ranjan, P. (1999) An economic analysis of child labor. Economics Letters, 64(1), 99–105 analyzes the reasons behind child labour. A supporting study is Beegle, K. Dehejia, R.H., and Gatti, R. (2006) Child labor and agricultural shocks. Journal of Development Economics, 81(1), 80–96.

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The numbers comparing jobs in the steel industry and the number of jobs in downstream industries is taken from Cox, L., and Russ, K. (2018). Will steel tariffs put U.S. jobs at risk? Available at: econofact.org/will-steel-tariffs-put-u-s-jobs-at-risk.

Evidence that American frims are indeed going across the border to avoid higher sugar prices is provided in Groombridge, M.A. (2001) America's bittersweet sugar policy. Trade Briefing Paper. Center for Trade Policy Studies, Cato Institute.

Analysing the effects of a reduction in the U.S. sugar portection is carried out in Beghin, J.C., and Elobeid, A. (2015) The impact of the U.S. sugar program redux. Applied Economic Perspectives and Policy, 37(1), 1–33.

The U.S. trade comission's report provides useful numbers to estimate the effects of trade liberalisation, U.S. International Trade Commission (2017) The economic effects of significant U.S. import restraints: Ninth update 2017. Available at: www.usitc.gov/publications/industry_econ_analysis_332/2017/economic_effects_significant_us_import_restraints.htm.

Examples of other indsutry protection that backfired are given in Irwin, D. (2015). Free trade under fire (p. 96).

Estimates on the number of direct and indirect jobs in the U.S. sugar industry can be found at www.usitc.gov/press_room/documents/testimony/332_325_002_0.pdf

4.11. Discussions on the psychological effects of unemployment are provided in Wanberg, C. (2012) The individual experience of unemployment. Annual Review of Psychology, 63, 369–396, and Powdthavee, N., and Vernoit, J. (2013) Parental unemployment and children's happi-

ness: A longitudinal study of young people's well-being in unemployed households. Labour Economics, 24, 253–263.

The effects of unemployment on children are discussed in Nikolova, M., and Nikolaev, B.N. (2018) Family matters: The effects of parental unemployment in early childhood and adolescence on subjective well-being later in life. Journal of Economic Behavior and Organization, forthcoming, Brown, D., and De Cao, E. (2018) The impact of unemployment on child maltreatment in the United States. ISER Working Paper Series, No. 2018-04, and Eccles, J.S. (2005) Influences of parents' education on their children's educational attainments: The role of parent and child perceptions. London Review of Education, 3(3), 191–204.

4.12. The U.S. trade commission report provides useful numbers to estimate the effects of trade liberalisation, see U.S. International Trade Commission (2017). The economic effects of significant U.S. import restraints: Ninth Update 2017. Available at: www.usitc.gov/publications/industry_econ_analysis_332/2017/economic_effects_significant_us_import_restraints.htm.

The calculation of households' losses due to protection is as follows. According to the United States Census Bureau there are 118,825,921 households in the U.S.; dividing the forgone welfare gain of $342.7 millions by the number of households yields a loss of $2.88 per household.

According to the United States Census Bureau there are 118,825,921 households in the U.S., dividing the forgone welfare gain of $342.7 millions by the number of households yields a loss of $2.88 per household.

The calculation of welfare gains per household if all restraints are lifted is almost identical to the calculation as for sugar. But this time the estimated welfare gains assume that all significant restraints are abolished. Data are obtained from the U.S. International Trade Commission (2017) and from the United States Census Bureau.

When talking about better in this chapter, it is important to remember that 'better' is always relative. Here 'better' is about aggregate gains for the entire economy, e.g., more and better paid jobs in the long run, a higher GDP, etc.

4.13. Just like tax havens, pollution havens are places where there exist beneficial pollution standards for the industry, i.e., low environmental standards allowing companies to pollute as much as they want.

Discussions on the effects of trade on pollution havens are given in Ederington, J., Levinson, A., and Minier, J. (2004) Trade liberalization and pollution havens. Advances in Economic Analysis & Policy, 4(2), 75. Berkeley Electronic Press, and Krugman, P.R., Obstfeld, M., and Melitz, M.J. (2018) International economics: Theory & policy. Eleventh edition, global edition. Pearson (p. 344).

The World development report (1995) Workers in an integrating world. World Bank. Oxford University Press, supports the claim that often imposing high environmental standards are protection in disguise.

An example of unions opposing higher labour and environmental standards can be found in: Bhagwati, J. (2007). In defense of globalization.

A voluntary export restraint is a practice where the exporting country voluntarily agrees to decrease its exports to the other country. Feenstra, R.C. (1984) Voluntary export restraint in U.S. Autos, 1980-81: Quality, employment, and welfare effects. In: Baldwin, B.E., and Krueger, A.O. (1984) The structure and evolution of recent U.S. trade policy. University of Chicago Press.

For the reader who wondered what a VER is. A voluntary export restraint (VER) is a practice where the exporting country voluntarily agrees decrease its exports to the other country.

Examples where protectionism actually harmed the envionment can be found in the following articles: Feenstra, R.C. (1984) Voluntary export restraint in U.S. autos, 1980-81: Quality, employment, and welfare effects. Published in: Baldwin, B.E., and Krueger, A.O. (editors). The structure and evolution of recent U.S. trade policy. University of Chicago Press, Altieri, A. (2012) 5.03 Bioethanol Development in Brazil. In: Sayigh, A.A.M. (2012) Comprehensive renewable energy. Elsevier, and Banschbach, V.S., and Letovsky, R. (2010) The use of corn versus ugarcane to produce ethanol fuel: A fermentation experiment for environmental studies. American Biology Teacher, 72(1), 31–36.

4.14. Examples were trade is harmful to the environment can be found in Bhagwati, J. (2007) In defense of globalization (p. 140).

The correlation between subsidies and pesticides can be found in Hartford, T. (2006) The undercover economist: Exposing why the rich are rich, the poor are poor— And why you can never buy a decent used car! Oxford University Press (p. 217).

The report shows that pesticides are not needed to feed the world is United Nations (2017) Report of the special rapporteur on the right to food. Available at: https://www.pan-uk.org/site/wp-content/uploads/United-Nations-Report-of-the-Special-Rapporteur-on-the-right-to-food.pdf.

Different effects from slashing protection and favouring trade can be found in Bhagwati, J. (2007) In defense of globalization (p. 138).

The claim that bees and pesticides are not necessarily compatible can found the study by Bullock, J.M., Shore, R.F., Heard, M.S., Pereira, M.G., Redhead, J., Ridding, L., Dean, H., Sleep, D., Henrys, P., Peyton, J., Hulmes, S., Hulmes, L., Sárospataki, M., Saure, C., Edwards, M., Genersch, E., Knäbe, S., Pywell, R.F., and Woodcock, B.A. (2017) Country-specific effects of neonicoti-

noid pesticides on honey bees and wild bees. Science, 356(6345, 1393–1395.

A discussion of pesticides and the amounts that are used can be found in Milner, A.M., and Boyd, I.L. (2017) Toward pesticidovigilance. Science, 357(6357), 1232–1234.

Biodiversity and the CAP are discussed at length in Pe'Er, G., Dicks, L.V., Visconti, P., Arlettaz, R-, Báldi, A., Benton, T.G., Collins, S., Dieterich, M., Gregory, R.D., Hartig, F., Henle, K., Hobson, P.R., Kleijn, D., Neumann, R.K., Robijns, T., Schmidt, J., Shwartz, A., Sutherland, W.J., Turbé, A., Wulf, F., and Scott, A.V. (2014) Agriculture policy. EU agricultural reform fails on biodiversity. Science, 344(6188), 1090–1092.

The European commission's evaluation of CAP is available at European Commission (2018) Evaluation study of the impact of the CAP on climate change and greenhouse gas emissions. Available at: ec.europa.eu/agriculture/sites/agriculture/files/evaluation/market-and-income-reports/2019/cap-and-climate-evaluation-report_en.pdf.

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A case study showing that the EU still drops subsidized products on developing countries' markets is Fritz, T. (2011). Globalising hunger: Food security and the EU's Common Agricultural Policy (CAP). Transnational Institute, FDCL-Verlag.

Agricultural protection and environmental damage is possible as outlined in Hartford, T. (2006). Thw undercover economist (p. 218).

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Discussing carbon emission: Spencer, M. (2008) Big Foot – In measuring carbon emissions, it's easy to confuse morality and science, The New Yorker, New York, 07 February. Available at: www.newyorker.com/magazine/2008/02/25/big-foot.

Discussing the global wine trade: Colman, T., and P'aster, P. (2009) Red, white, and "green": The cost of greenhouse gas emissions in the global wine trade. Journal of Wine Research, 20(1), 15–26.

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study of cut roses for the British market produced in Kenya and the Netherlands. Précis Report for World Flowers, February.

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5 Conclusion

Aristotle said "It is the mark of an educated mind to be able to entertain a thought without accepting it."

Whether you were a friend or foe of free trade when reading the title of this work, we hope you enjoyed the short excursion into the fascinating world of free trade. We touched upon many issues of international trade. But of course there is so much more to discover. The extensive literature sections at the end of each chapter provides a starting point to the many books and articles written about every aspect of trade.

Politicians, lobbyists and activists' views on international trade might seem bewildering and often crazy. Our current world holds a new surprise for im- and exporting industries virtually every day.

We believe it is important to understand the arguments for and against trade and to be able to evaluate the impact of changes in trade policy. Understanding other peoples' arguments, or at least knowing why they believe what they believe, is key. Because without understanding the position of someone else, we cannot engage in a constructive discussion. Without constructive arguments there will be no understanding and no progress. This is particularly true for a controversial topic such as international trade.

Our aim was to familiarise the reader with the many aspects of trade: why trade happens, how trade shaped history, the positive and negative impact of trade. It is up to the reader to make the most out of this information when refecting about current debate and views put forward for and against international trade. We hope you can now talk the talk!