

TWO SAMPLE LESSONS FOR INTRODUCING TWO-CIRCUIT ECONOMICS

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PREFACE

In any economy, there are two types of firm. That fact has been introduced and verified by (McShane 2010), (Quinn 2021), (Quinn & Benton 2019) and (Quinn 2018).¹ What is needed, then, are efforts by the educational community to shift the focus of economic teaching away from conventional models to concretely verifiable two-circuit economics. Indeed, it is possible

¹ For a more comprehensive introduction, see (McShane 2017). It was Bernard Lonergan (1904–1984) who, in the late 1930s, made the initial breakthrough to the new standard model. See (Lonergan 1998) and (Lonergan 1999). The 1998 book consists of source documents. The 1999 book includes source material but is “not an archival record of what Lonergan wrote” (Editors, Lonergan 1999, xii). It is much edited and editorial comments emphasize philosophical issues rather than the empirical approach taken by Lonergan.

for high school and undergraduate teachers to contribute effectively to that shift by using currently available textbooks.

This paper supports teachers who are already open to the fact that any economy has two circuits². Specifically, it provides material from which to develop a brief introduction to two-circuit economics, tailored to students' needs in any introductory economics course in high school, college or university. The topic could be introduced, for example, in lecture format, and/or as an enrichment project.

A fundamental aspect of the approach involves a clean break from merely speculative models, particularly to the exclusion of games and simulations that have become popular but that trap student thinking into conventional and fundamentally flawed models. Teachers may overcome this challenge by inviting students to draw on their own experience, to have them think about actual economic events, and to focus on specific details in the day-to-day running of a local business in their community.

This paper, then, is addressed to teachers and outlines two sample lessons. It leaves room for pedagogical refinement to the discretion of individual teachers. For instance, its real-world examples could be modified to reflect local economic activity familiar to their students. In addition, the paper provides practical criteria for teachers wishing to apply to curriculum committees that expect clearly identified 'tasks' and 'learning outcomes.'

² Teachers who have not yet worked with the introductory materials cited could pick up the basic insights from this paper.

ABSTRACT

The two sample lessons described are intended to meet an emerging and recognized need in economics education, namely, to study real-world examples. The focus of the lessons is on *production* and *consumption*. Pedagogy used is a combination of *active learning* and *in-class presentation*. Inviting students to inquiry about goods available in their own homes, towns, neighborhoods, cities, and countries, enables them to make explicit what so far is mainly only implicit; that is, not only are there are two types of production, but they are mutually dependent in specific ways.

INTRODUCTION

Two sample lessons are provided as a contribution toward meeting an emerging and recognized need in economics education, namely, to study real-world examples. (See, e.g., (Pasinetti, 2020), (Pühringer & Bäuerle 2019), (Ray 2018), (Asarta, Jennings, & Grimes 2017), (Coyle 2012), (Jones, Hoest, Fuld, Dahal, & Colander 2009), and (McGoldrick, Battle, & Gallagher 2000).)

The lessons focus on *production* and *consumption*. In the (*Voluntary National Content Standards* 2010), ‘production’ is mentioned 39 times and ‘consumption’ 26 times, respectively. The terms feature throughout high school and undergraduate curricula. Also part of standard curricula is the identification of two types of goods, namely, capital and consumer. In both cases there are intermediate goods. There is, then, production of capital goods and production of consumer goods. By inviting students to investigate real-world examples, the lessons enable them to make explicit what so far is mainly only implicit; that is, not only are there are two types of production, but they are mutually dependent in specific ways.³

Preliminary comments are organized under the following headings: content of the lesson, pedagogy, results, and learning outcomes. Section 2 outlines Sample Lesson One: Consumer and Capital Goods and Services. Section 3 outlines Sample Lesson Two: Essential Elements. Section 4 points to Further Contexts. Please note that from this point forward, Sample Lesson One and Sample Lesson Two will simply be called ‘Lesson One’ and ‘Lesson Two’ or, when the context is clear, ‘the lesson.’

Content: Capital and consumer goods emerge from supply chains. Supply chains can be short. For example, a farmer might sell their produce from a roadside stand or at a local market. Or again, a woodworker may build furniture with wood obtained from their own property and go on to sell what they make directly to consumers, either locally or through a

³ This clears up various ambiguities in the literature and textbooks regarding intermediate goods, final goods, capital goods, consumer goods, and ‘use.’ This will be discussed, briefly, in Further Contexts, point 2.

distribution service such as Amazon.com. More commonly, however, supply chains have many tiers, involve numerous businesses, and can be international. Supply chains begin with natural resources and yield finished goods that are sold for use or consumption (Drahokoupil 2015).

In the lesson, the words ‘supply’ and ‘demand’ are used. Note, however, that this is not in reference to the “law of supply and demand” or other market mechanisms. The focus is real-world and elementary, on *instances* of actual supply that in fact meet *instances* of actual demand, whatever prices, quantities, or other variables happen to be. This focus also helps make explicit certain roles of the financial sector—that is, not in relation to savings and investment (see, e.g., (O’Sullivan & Sheffrin 2020), (Mankiw 2019, sec. 20.1)) but in relation to the two types of production.

Pedagogy: Pedagogy for the two lessons combines classroom presentation and active learning, focused on real-world production, usage, and consumption. Benefits of active learning are well known and have been much studied. (See e.g., (Ray 2018), (Asarta et al. 2017), (Hettler 2015).) Combining active learning with appropriate classroom presentation is effective. (See, e.g., (Fizel 2015).). Both lessons allow for individual and group work, classroom discussion and homework assignments.

The two lessons begin with any real-world economy. More specifically, they invite students to inquiry about the production of goods in their own homes, towns, neighborhoods, cities, and countries. A student might, for example, “research the supply chain of something they own (e.g. laptop, t-shirt, food product)” (Madden 2020). Notwithstanding, inquiry is invited regarding *all* locally available goods, for example, cars, tractors, trains, homes, office buildings, and so on.

In the literature, lessons and data on production and supply chains include: (“Lesson Plans, Food System Curriculum,” 2016), (“Lesson 4: What is the Food Supply Chain? Understanding Goals” n.d.), (“A Supply Chain. Grades 9-12.” 2020), (“Activity: Personal Supply Chain” 2020), (“From Inception to Consumption-Understanding the Global Supply

Chain. Grades 9-12” n.d.), (“Lesson three: The global supply chain Lesson plan,” 2020), (“Supply Chain for Cheese: From Farm to Fork” 2019), (“Forestry and Wood Products Supply Chain” 2019), (Fu 2014).)

Lessons One and Two go beyond supply chains to how the production of capital and consumer goods are mutually related in real-world economics. As a result, diagrams in the lesson emerge organically, as expressions of student learning.

Note to instructor: The four diagrams in Lesson One are obtained organically, by describing real-world examples to produce a basic template. The four diagrams in Lesson Two involve a subtle shift in focus: (a) initially, one identifies commonalities in the first four diagrams, and (b) further observation of how businesses actually work generate additional elements. The use of software such as PowerPoint can be used to reveal the additional elements sequentially, superimposed on the same template.

Results: We draw attention to two sets of results, in pedagogy, and in content, respectively.

Pedagogy: (1) The two lessons help meet an acknowledged need for lessons based on real-world economics, (2) they are accessible to students in grade 12 and beyond, (3) they include active learning by inviting student inquiry about the production of goods in their own lives, homes, towns, cities and countries, and (4) because of (3), the approach is accessible to teachers and students globally.

Content: (1) The lessons enable the student to make explicit what is already implicit in current standard curricula in grade 12 and college level economics. They show how two types of production are related, as well as specific roles played by the financial sector in supporting production, (2) Because of (1), the lesson content is new but naturally fits into current high school, college and university curricula, and so can be introduced while using current textbooks (for instance, in high schools, (O’Sullivan & Sheffrin 2020), (Anderson & Ray 2019), (Bolotta, Hawkes, Mahoney, & Raposo 2020) in Ontario, Canada), and at the post-secondary level (Hubbard & O’Brien 2019), (Mankiw 2019)), (3) because many supply chains in real-world economics are international (Drahokoupil 2015), the lessons will help

prepare students for junior- and senior- level courses that include international trade, (4) the lessons work well in conjunction with discussion of circular flow. Indeed, it highlights the fact that there are two circular flows within the more familiar circular flow, and (5) details are cross-referenced with (*Voluntary National Content Standards* 2010).

Learning Outcomes

Knowledge

Students will discover

- key aspects of the roles of businesses in production, not only in their local community, but also in any community, village, town, city, region, national and international, how capital and consumer supply and demand work together in *instances* (see paragraph 4, above)
- how money circulates in the economy in support of two types of production

Skills

Students will be able to

- draw independently on their own experience, in their own lives and communities
- unambiguously distinguish capital goods, consumer goods and intermediate goods.

LESSON ONE: CONSUMER AND CAPITAL GOODS AND SERVICES

Purpose: Students draw on their experience to discover the structure of a supply chain.

Task 1.1 – Discover a supply chain in the construction of a new home

Steps

1. Invite students to identify specific things that they either possess or hope to acquire. Examples could include, for instance a cell phone, a guitar, soccer shoes, coffee, ice skates, snacks, lunch, clothes, a car, a trip to visit friends, a college or university degree, and so on.
2. At this stage, keep the focus of the conversation on identifying specific items. When money needed to purchase these things inevitably arises during conversation, advise the students that it is important to defer discussion of money to later in the course (Standard 11). See “A Strategic Aside” below.
3. Have the class compile its list of items. Use available visual media to display results.

For instance, suppose students identify the purchase of a new home. This example can be useful because it includes elements that tend to be familiar.

4. Facilitate discovery of details of what goes into the construction of a new home.
5. Invite students to observe the operations of a local builder, in this case, Clancy Builders, Owen Sound. Clancy Builders mainly builds residential properties (“Clancy Builders, Grey and Bruce Counties,” 2020). For many years, the business had a broader portfolio. They specialized in custom residential homes, recreational housing, such as summer cottages and winter chalets, and commercial structures.

A strategic aside: The question of money foreshadows how quickly the topic can become complex and, as a result, throw the discussion out of focus. Other subtleties also arise. For example, a student might observe that people buy homes previously owned, or they rent homes. This can lead students to suggest other items that are rented or previously owned. For instance, in Owen Sound, Ontario, there is a local store, “Value Village,” that sells second-hand goods. Sorting out how money, rentals and second-hand goods fit into the economy needs to be deferred to follow-up work in Lesson 2, Task 2.3.

Task 1.2 – Observing the structure of a supply chain

Purpose: To invite students to observe the process by which Clancy Builders acquires its wooden building materials.

Results from Task 1.2 will reveal:

- Wood products are moving toward eventually being purchased by Clancy Builders. In other words, what we find is a supply chain. It starts from trees grown and then felled but not yet finalized when wood products are purchased by Clancy Builders.
- All previous stages of production of the wood products are intermediate, including the purchase of the wood products by Clancy Builders. But when Clancy Builders goes on to build a house with those products, they then become part of a house. And it is the house that is the finished good.
- A house, a finished good that is partly made of wood, is removed from the supply chain when it is sold to the homeowner.

Steps

1. Have the class compile a list of examples. Use available visual media to display results.
2. For instance, houses need rafters.

Identifying tiers in a supply chain for wooden rafters

- Clancy Builders purchases wood supplies from a local lumber retail store, say, Home Hardware. The lumber retail store purchases their supply from Welbeck Sawmill.
- Have students search online for freight and shipping, and other tiers going back to logging, skidding, treatments of wood with chemicals, processing, tarping, binding, and so on.

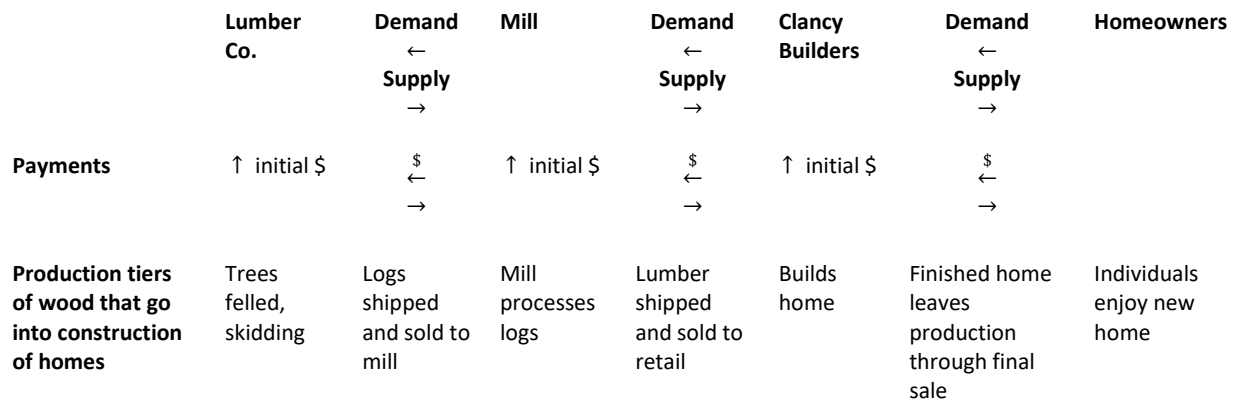


Figure 1 Supply chain for rafters that go into the construction of a new home. Trees are grown and felled, logs are shipped to a mill, wood is further processed, wood products are shipped to construction retail supplier, wood products are purchased by Clancy Builders who then include them in the construction of a finished home which leaves production through final sale to homeowners.

Symbolism: ' → ' refers to goods forwarded to the next lower tier in production; ' \$ ← ' means corresponding payments for goods received and services rendered; and ↑ initial \$ refers to corresponding 'initial payments' (that is, payments for wages, rents, business loans, and so on).

Task 1.3 – Branches in a supply chain

Purpose: To invite students to observe that not only are there many intermediate materials that go into the construction of a home, but also each can have its own set of intermediate stages.

Results from Task 1.3 will reveal:

- The supply chain for intermediate materials that get to Clancy Builders and finally become materials in the construction of a home has many branches.

- Each branch has its own intermediate goods and intermediate tiers.
- Branches converge to provide materials that eventually are purchased by Clancy Builders and go into the construction of a new home.

Steps

1. Wooden rafters are only one of many materials that go into construction of a home. A finished home includes:
 - wiring, paint, nails and screws, plasters, plaster boards, drywall, bricks and mortar, glass windows, concrete for a foundation, shingles for a roof, hardware for doors throughout the house,
 - Plastic components for some window frames,
 - Chemicals that serve as preservatives, anti-fungal agents, and bug repellants in wooden support beams,
 - Glues, wood products and other components in the manufacture of chipboard and plywood.
2. Have the class describe the tiers of production of at least one of these intermediate goods.

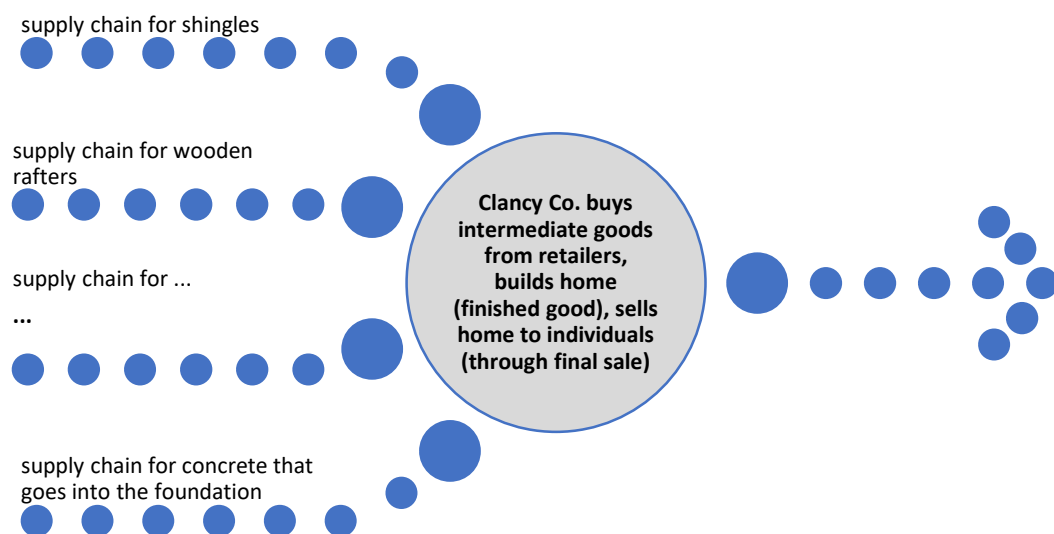


Figure 2 Supply chains for numerous goods in the construction of a new home. A finished home leaves production when sold.

Task 1.4 – Observe other supply chains and distinguish usage of goods

Purpose: To invite students to observe other supply chains for items that are used but are not included in the assembled material that make up a home.

Results from Task 1.4 will reveal:

- There are certain items such as hammers and other tools that are not part of the materials that make up a home.
- Each of these items has its own supply chain.
- Each supply chain is distinguished according to how the items are used. Each item is used in the sense of being put into action or service by individuals and groups directly or indirectly involved in constructing the home.

Steps

1. Help the class identify items that are involved in building a home but are not part of the assembled material that make up a home.
2. Guide the inquiry by focusing on:
 - Other items needed but that are not part of the assembled material that make up a home. (For example: tools, vehicles, business premises, garages, office supplies, pens and paper, computers, architectural design computer programs, consumption of electricity and gasoline.)
 - How they are used. Help the class distinguish how these items are **used** by individuals and groups directly or indirectly involved in the construction of a new home.
 - Tools, typically, are used to build many homes. A hammer, typically, is not replaced after every time it is used. It is also possible that a circular saw may be purchased at the time of

construction, not to be used in the building of this or that particular home but may be held in reserve for other projects.

- It is convenient to introduce terms to help keep track of the various goods and services and supply chains.
- A home, and other goods such as clothing, food, and so on, are called *consumer goods* (Standard 1).
- A saw, tools, and other goods that are used in producing consumer goods are called *capital goods* (Standard 1).
- *Intermediate goods* eventually become part of finished goods (Standard 6).
- There are *intermediate goods* in the production of both capital goods and consumer goods.
- *Capital goods* are used in the production of capital goods and consumer goods.
- Expand Figure 2 to account for other materials and their use, so that the upper row accounts for all goods that eventually become *finished goods* used by the builder, and the lower row accounts for all goods that eventually become materials that go into the construction of a new home.

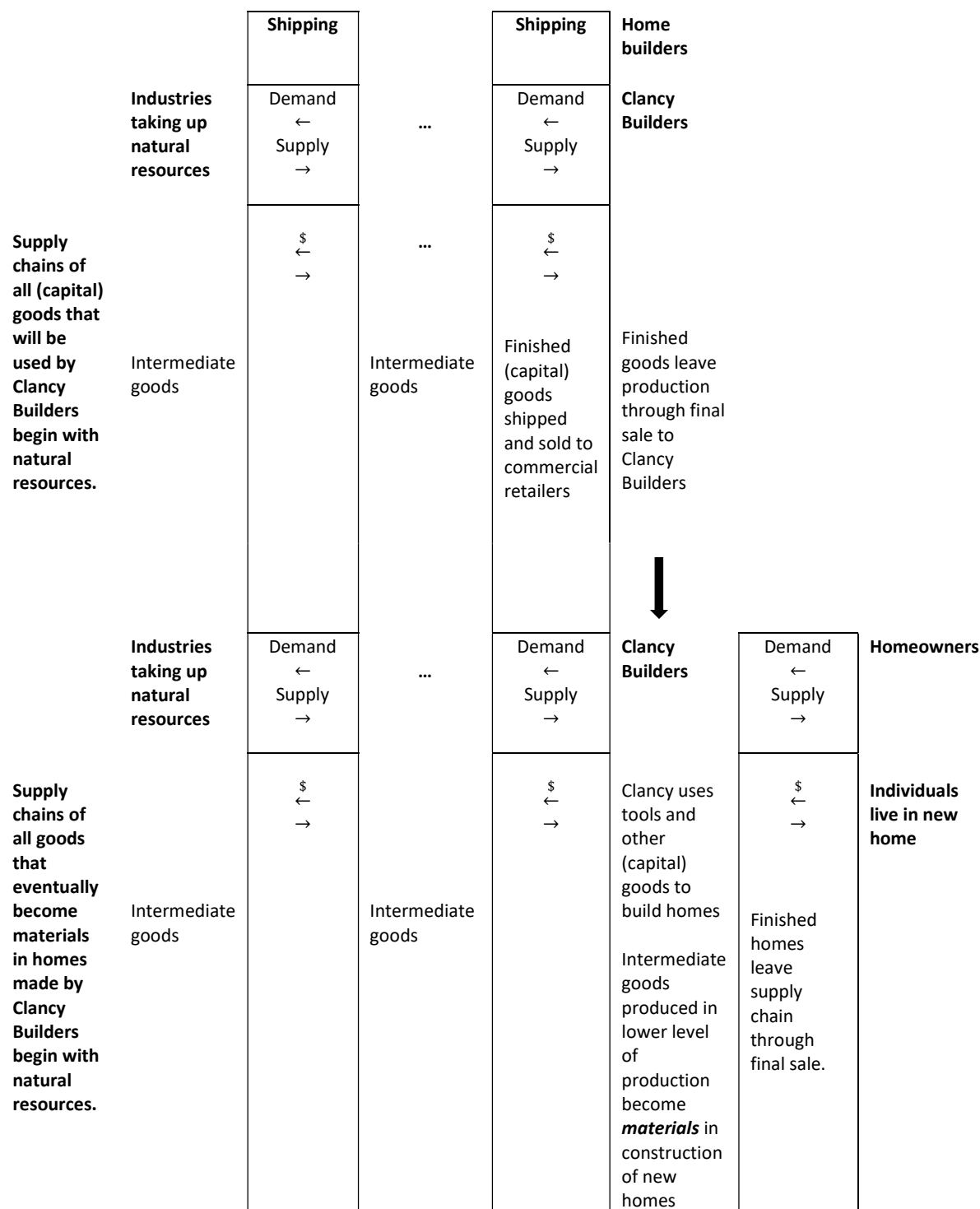


Figure 3 Supply chains of all goods used by Clancy Builders, and supply chains of all goods that go into the construction of new homes made by Clancy Builders. Finished goods in the upper (capital) levels leave production through final sale to Clancy Builders. Downward arrow represents the fact that Clancy Builders then uses those goods to build homes that leave production through final sale to homeowners.

Lesson 1 Homework Assignment

Purpose:

- **To add further examples of capital and consumer supply chains**
- **To practice distinguishing how products (also called goods) are classified within supply chains (intermediate, finished).**

Task for Homework

1. Identify a product supplied by a local business that is of personal interest. It need not be one discussed in class.
2. Working with Figure 3, distinguish whether the product is classified as capital, consumer, intermediate, finished.
3. Identify and track supply chains for this product by linking each chain back to natural resources.

LESSON TWO: ESSENTIAL ELEMENTS

Purpose: To identify common elements in Figure 3

Task 2.1 – To invite students to observe common elements in the Clancy Builders supply chains and the supply chains of other products supplied by local businesses

Results from Task 2.1 will reveal that

- At all stages of production of capital goods (intermediate and finished), there are instances of supply, and demand.
- At all stages of production of consumer goods there are instances of supply, and demand.

Steps

1. Display various examples of goods supplied by local businesses.
2. Facilitate identification of common elements in the production of goods (intermediate, finished, capital, consumer) by comparing supply chains in the Clancy Builders example (Figure 3) and the supply chains of other local businesses.
3. Modify Figure 3 further by removing names of businesses to highlight the common elements that will produce Figure 4.

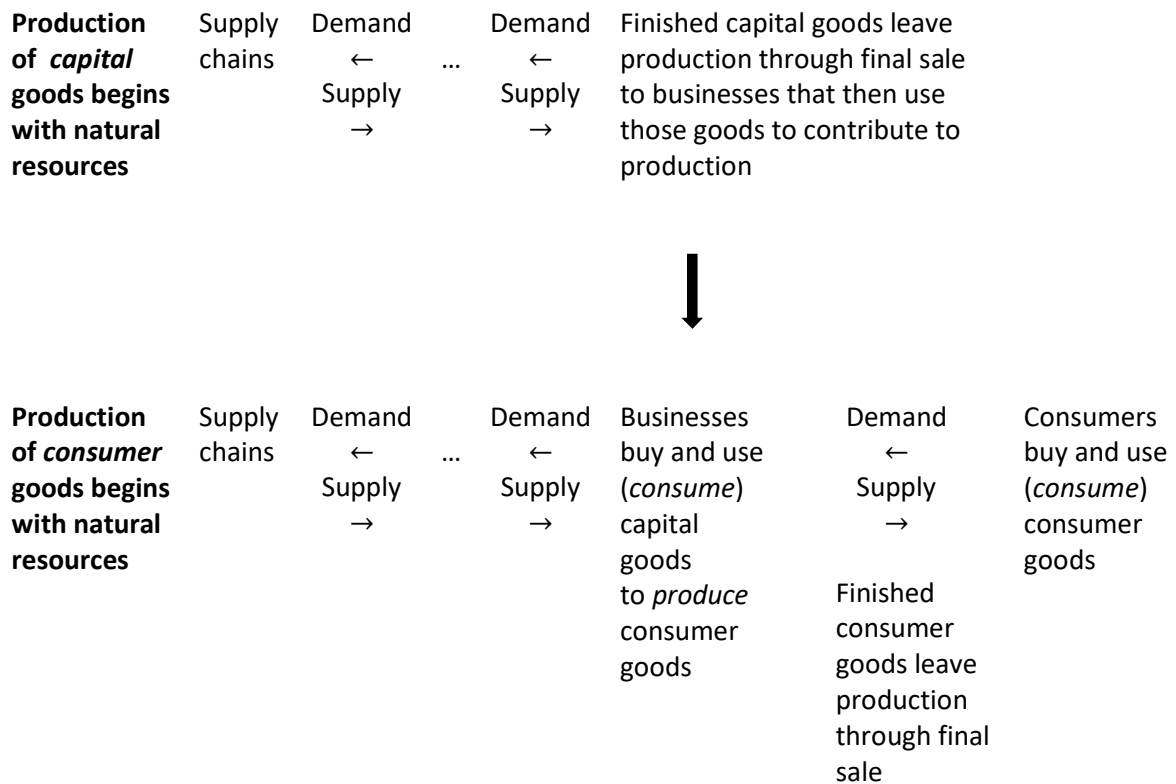


Figure 4 Supply chains of capital goods and consumer goods.

Task 2.2 – To invite students to observe how expenditures (payments) are distributed at every stage in the production of capital goods and consumer goods

Results from Task 2.2 will reveal that

- at every tier in the production of consumer goods (intermediate and finished), there are instances of supply and demand to be met, respectively, by corresponding expenditures.
- at every tier in the production of capital goods (intermediate and finished), there are instances of supply and demand to be met, respectively, by corresponding expenditures.
- to meet these obligations, compensation or expenditures (payments) flow in the opposite direction to the production of capital and consumer goods in supply chains.

Steps

1. Display Figure 4 to the class.
2. Class will observe the direction of the flow of goods.

For example,

- a. Clancy Builders bought a new truck. The truck needs regular maintenance and eventually replacement, payments for which are for capital goods.
 - b. Clancy Builders pays income to its employees, involved in building a home, a consumer good.
 - c. In the past, Clancy Builders also made commercial premises. In those cases, they contributed to the production of capital goods, and incomes to employees were for work that contributed to the production of capital goods.
3. To build all corresponding expenditures (payments) into the diagram, it will be convenient to introduce some notation.

Let

$S(C)$ stand for instances of *consumer supply*, that is, instances of supply contributing to the actual production of consumer goods and services (intermediate and finished),

$D(C)$ stand for instances of *consumer demand*, that is, instances of demand for goods that contribute to the actual production of consumer goods and services (intermediate and finished),

$S(P)$ stand for instances of *capital supply*, that is, instances of supply contributing to the production of capital goods and services (intermediate and finished),

$D(P)$ stand for instances of *capital demand*, that is, instances of demand for goods that contribute to the production of capital goods and services (intermediate and finished),

$d(C)$ stand for *expenditures* (payments) that in fact meet *consumer demand*, and

$d(P)$ stand for *expenditures* (payments) that in fact meet *capital demand*.

4. Adding these elements to Figure 4 will produce Figure 5.

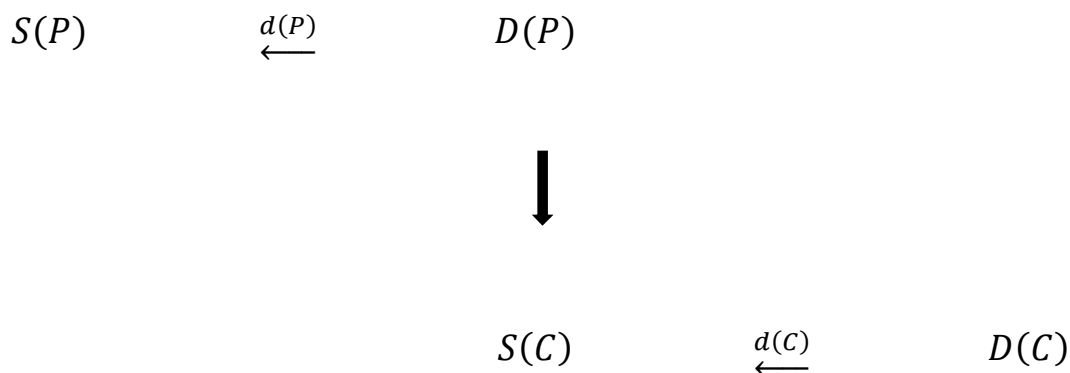


Figure 5 Capital and surplus supply and demand and expenditures.

6. What other payments are involved? Discuss examples. Draw students' attention to the fact that there are also payments for maintenance and replacement, and personal income.

Let

$m(C)$ stand for monies directed to pay for maintenance and replacement of capital goods used in the production of consumer goods,

$m(P)$ stand for monies directed to pay for maintenance and replacement of goods used in the production of capital goods,

$i(C)$ stand for personal income for work that contributes to production of consumer goods, and

$i(P)$ stand for personal income for work that contributes to production of capital goods.

7. Including these elements will produce Figure 6.

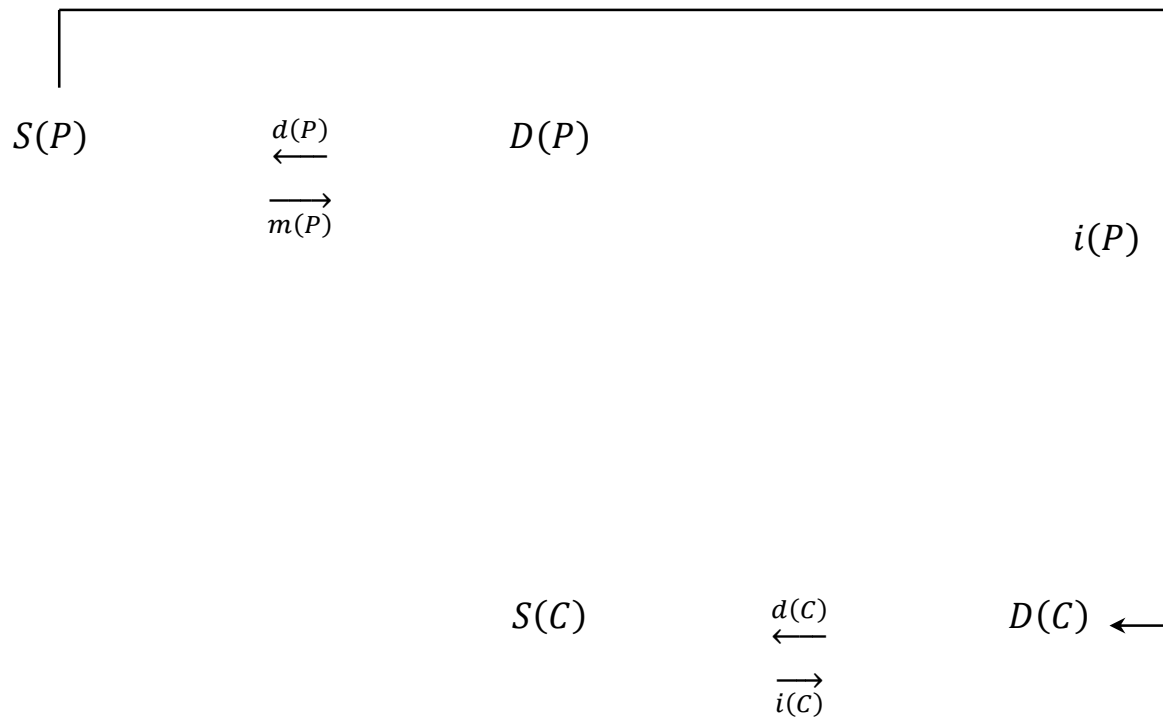


Figure 6 Capital and consumer supply and demand, expenditures, maintenance and replacement and personal incomes.

8. Observe that there is a lack of symmetry in the diagram.
9. Adjust the diagram by flipping the $i(P)$ component to the other side. This will produce Figure 7.

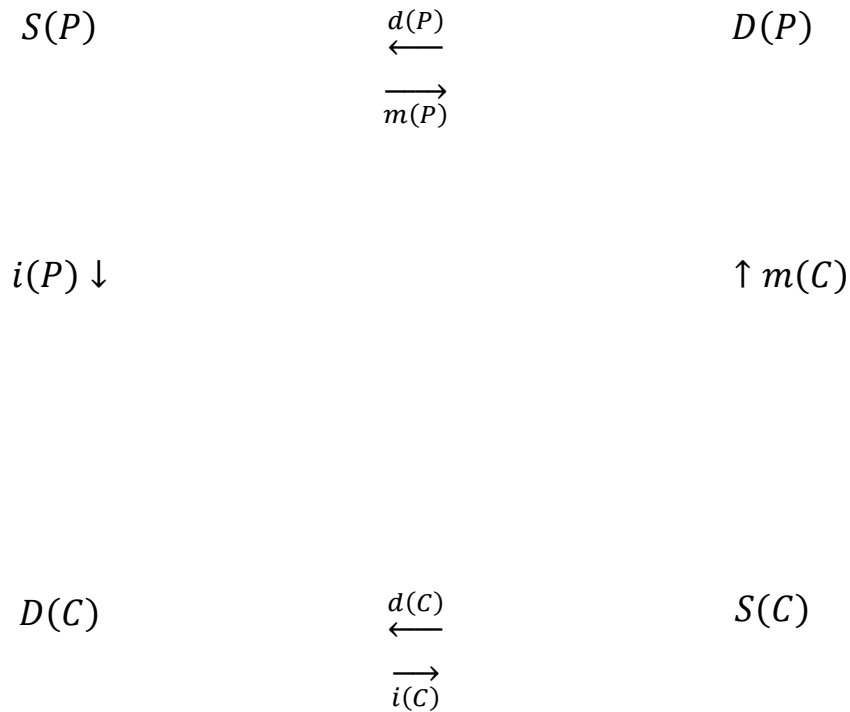


Figure 7 Reorganized Figure 6. Capital and consumer supply and demand, expenditures, maintenance and replacement and personal incomes.

Task 2.3 – Redistributive Activity

Results from Task 2.3 will reveal that

In addition to the two types of supply and demand, there is also *redistributive activity* in the economy.

For instance,

- a. there is a second-hand market
- b. there is redistribution of ownership within the economy

- c. banks help facilitate change of ownership
- d. currency exchange

Steps

1. Display Figure 7 to the students.
2. Introduce the topic of redistributive activity by asking students to come up with second-hand items that are available in their local community.
 - In these cases, goods in question are previously finished and sold. They are no longer in production.
3. Clancy Builders anticipates that home building will be slow one year. Some inventory of supplies is redirected to contracts to build commercial properties. Observe that redistribution need not be change of ownership; in other words, redistribution is not proprietary.
4. Discuss examples of redistributive activity.
5. Draw students' attention to how the second-hand market operates.
 - a. Cite the example of when someone purchases a previously owned home. There is a change of ownership. This is a redistribution of goods within the economy.
 - b. For homes, dollar amounts involved usually are too large for an individual to pay in full. A home buyer gets a loan (mortgage) from the bank. The bank helps facilitate the change of ownership by paying for the home. Repayment of the bank loan is made over time. (Details of loan structures are studied in mathematics of finance.)
 - c. As in step 3 (above), redistribution need not be change of ownership, but can effect a change of contribution from consumer production to capital production, or vice versa. (It will also

be helpful to explore examples that change contribution from capital production to consumer production.)

- d. Redistributive activity includes, for example, the work of credit card companies, banks, mortgage companies, and the purchasing of stocks (percentages of ownership). In other words, there is the work of facilitating all types of redistribution in all capital and consumer production. These topics come up later in the course (Standard 10).

6. By including **redistributive activity** R , the class can be given a complete picture, as shown in Figure 8.

- The arrows from R to capital and consumer supply and demand represent payments.

7. Discuss how those payments can go in both directions.

For instance, a bank might provide payments to an individual with a savings account that earns interest. Credit may be provided to an individual or group to start a new business. On the other hand, a homeowner with a mortgage may set up regular payments to a mortgage company (bank, credit union, etc.).

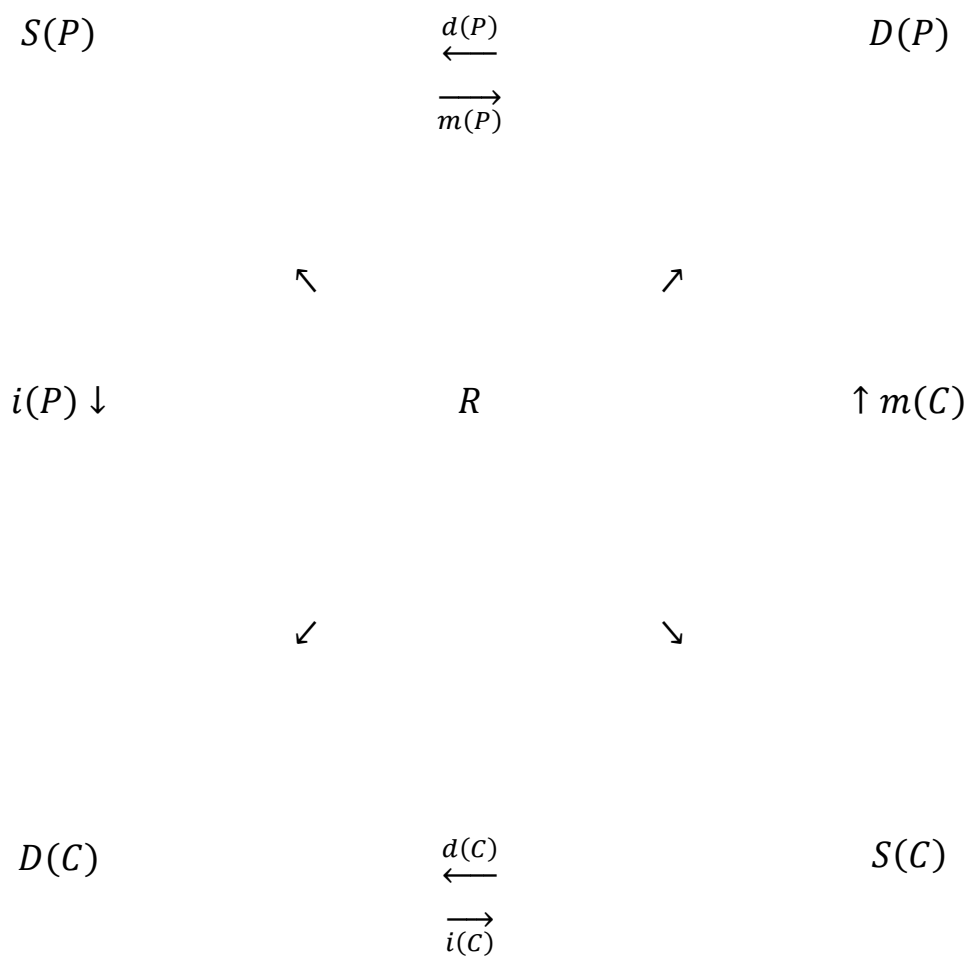


Figure 8 Capital and consumer supply and demand, expenditures, maintenance and replacement, personal incomes, and redistribution.

FURTHER CONTEXTS

We end with some related follow-up topics, all of which can be drawn out through examples in local economies accessible to students.

1. Public goods (Standard 16) Some public goods go into the production of capital goods or are final capital goods. Others go into the production of consumer goods or are final consumer goods.

2. Intermediate goods, capital goods, consumer goods, final goods (Standards 1, 11, 15 and 18) Conventional definitions define intermediate goods relative to final goods. For instance: “A final good is a good sold to final users” (Mateer, Coppock, O’Roark 2016, 312); while “[a]n intermediate good is a good that firms repackage or bundle with other goods for sale at a later stage in the production process (Mateer, Coppock, O’Roark 2016, 311). Or, again, “raw materials are processed into intermediate goods by one firm and then sold to another firm for final processing” (Mankiw 2013, 22). Notice, however, that the conventional definitions are ambiguous, for they ignore the distinction between capital production and consumer production. There are two types of final goods, capital and consumer. There are, therefore, two types of intermediate goods, namely, intermediate goods that eventually enter into the production of final capital goods; and intermediate goods that eventually enter into the production of final consumer goods.

3. International trade (Standard 6) This is an advanced topic that is studied at the post-secondary level, at both undergraduate and graduate levels. Follow-up to the two sample lessons can include looking to particular international supply chains, with an eye on whether they are for capital or consumer goods and services in final markets, which is determined by usage, after final sale.

4. Rental properties (Standard 8) By examining cases, we find that some rental properties are used for capital production and others for consumer production. Some are used for both. Others, like residential properties, are finished consumer products. (See 4, below.) Identifying payment types can be a challenging and interesting exercise. Payments for property management usually split, contributing partly to costs of property maintenance, to

the financial sector (redistributive), and as income to owners over and above costs. Some rental agreements are rent-to-own. In such cases, payments may also be partly directed toward discharging a mortgage.

5. Standard of living (Standard 15) Figure 7 and Figure 8 enable students to identify how goods and services support day-to-day living.

6. Aggregate Demand (AD) and Aggregate Supply (AS) (Standards 7 and 8) Actual aggregate demand and actual aggregate supply (see Introduction, paragraph five) consist of Aggregate Capital Demand and Supply, and Aggregate Consumer Demand and Supply. Again, the reference here is to *instances*, not trends such as in prices and quantities. These cut across sectors in the economy. For instance, ‘wood products’ contribute to both capital and consumer production. Most milk products go to food products (consumer goods) but some milk products are used in industry (Audic, Chaufer, & Daufin, 2003). In finance, a bank may facilitate mortgages for homes, for business properties involved in the production or provision of capital goods and services (intermediate or final), as well as for business properties involved in the production or provision of consumer goods and services (intermediate or final).

7. Stock markets and fractional ownership (Standard 10) Buying and selling stocks (fractional ownership of an enterprise) does not contribute either to production or provision of capital or consumer goods and services. These activities are redistributive.

8. Taxes (Standards 4, 10, 14, 16, 17, 20) Whatever tax rates happen to be, and in whatever political context, one can always ask how revenue from taxes is spent? For example, does it help pay for the purchase of trucks or other capital goods needed by a community, or perhaps for parks, residential water supply, or other consumer goods needed by a community? There is also the exercise of identifying which government activities, such as tax offices, are redistributive.

9. Gross Domestic Product (GDP) (Standards 15, 18, 19) The GDP (Standard 15) is a combination of GDP for capital goods and GDP for consumer goods: $GDP(\text{total}) = GDP(\text{capital production}) + GDP(\text{consumer production})$.

10. Other metrics (Standard 15) Limitations of the GDP are discussed in some high school and undergraduate textbooks. (See, e.g., (O’Sullivan & Sheffrin 2020, ch. 12).) A number of leading economists consider the GDP to be “the wrong tool for measuring what matters”

(Stiglitz 2020). It “merely measures the size of a nation’s economy and [among other things] doesn’t reflect a nation’s welfare ... [nor] the distribution of money across society” (Kapoor & Debroy 2019). The possibility of alternative metrics is being explored. (See, e.g., (Stiglitz 2020), (Stiglitz, Fitoussi, & Durand 2019a), (Stiglitz, Fitoussi, & Durand 2019b), (Coscieme et al. 2019), (Goldsmith 2019) and (“Happiness and growth - Economic growth does not guarantee rising happiness” 2019). The results of the two lessons suggest a useful refinement of the GDP, that is, $GDP(\text{total}) = GDP(\text{capital production}) + GDP(\text{consumer production})$. Note, however, that the accounting needed to provide such measurements is not yet done. But the relevance to real-world economics is clear, and the partitioning of the GDP can be taught within current curricula.

11. The Circular Flow Model (Standard 18) Foundational to current establishment economics is the so-called “circular flow model.” It is presented in virtually every high school and undergraduate textbook. Sectors are added to the circular flow diagram, as needed. There are, of course, firms and households. However, the alleged circular flow is an imaginary model that, as such, does not occur in actual economic process. As the sample lessons reveal, there are two types of firm. And further study reveals that there are two circular flows, one in capital production and one in consumer production. See also points 5 and 8 above, as well as Figure 6 and Figure 8.

12. Accounting (Standard 13) Implementation of the two-circuit model will require the development of accounting methods that track production to sale of finished goods, and their use. See point 2, above.

13. Prices, wages, profits (Standards 4, 8, 10, 13) See Figure 8. In implementing the two-circuit model, questions will inevitably arise such as: Are wages and salaries $i(C)$ and $i(P)$ compatible with patterns of capital and consumer production and provision? Are *excess profits* in firms (that is, revenues in firms that are above and beyond immediate needs in production, provision, wages, salaries, maintenance and replacement) sufficient to support research, development, capital expansion or consumer expansion? Is the output of consumer production meeting local needs? Notice also that the key distinctions are not proprietary but regard the successful functioning of the two-circuit economy.

The current standard model advances a radically different ethos. Consider Mankiw's claim that "the goal of the firm is to maximize profit. Profit equals revenue minus costs; it is what the owners of the firm keep after paying the costs of production" (Mankiw 2013, 53). Notice that there is no regard for the successful functioning of the economy. The emphasis, instead, is on ownership and the profit of owners, and the definition of profit ignores excess profit, the absence of which locks an economy down and undermines the possibility of development. Notice also that the alleged goal of maximizing profit ignores local needs. Furthermore, the principle is contradicted by the fact that an economy produces goods and services, not for the sake of money, but for consumption and usage. The alleged goal of the firm also supports the commoditization of money, another fundamental error in contemporary establishment economics.

The effects of establishment economics have been, and continue to be, disastrous, globally. Minimally, however, two semesters in two-circuit economics would be needed to adequately formulate these problems.⁴

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⁴ We recommend (Anderson and McShane 2002), as helpful bridge reading.

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