

Old One's D20 Economic System

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OLD ONE'S D20 ECONOMIC SYSTEM V1.2

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Economic System:

The following is the economic system that I developed for the 3E. You can use it at several different levels and scale it to be as general or as specific as you would like it to be. Regardless of what level you choose, the mechanics are identical - you simply use the 'd20' mechanic.

You set a DC against which a campaign area, guild or trading caravan/fleet must roll to achieve success. The range is generally 8 (easy) to 12 (moderate), with the default being 10. Then you assign circumstance modifiers for whatever circumstances you wish to take into account, such as weather, bandit activity, technology level, magic assistance, etc.

Once you have determined the DC and applicable modifiers, roll a d20, add or subtract modifiers and compare the result to the table below:

Product Availability

DC RESULT	OUTCOME	EFFECT
1:	CRITICAL FAILURE (NATURAL/MAN MADE DISASTER - FIRE, FLOOD, WAR)	
DC (-6) +:	MAJOR FAILURE (SEVERE SHORTAGES, PRICES SKYROCKET)	PRICES INCREASE 200% TO 500% ($1d4 + 1 \times 100\%$)
DC (-1) TO (-5):	MINOR FAILURE (MINOR SHORTAGES, PRICES INCREASE)	PRICES INCREASE 20% TO 200% ($2d10 \times 10\%$)
DC (0) TO (+5):	REGULAR SUCCESS	
DC (+6) +:	MAJOR SUCCESS (SUBSTANTIAL SURPLUS, PRICES DECREASE, SIGNIFICANT EXPORTS)	PRICES DECREASE 10% TO 40% ($1d4 \times 10\%$)
20:	CRITICAL SUCCESS (MARKET GLUT, PRICES PLUMMET, MAJOR EXPORTS)	PRICES DECREASE 20% TO 80% ($2d4 \times 10\%$)

Example - Rastia is a campaign area located in temperate hills. The DC for growing food in the area is 11. Circumstance modifiers for the area are -2 (draft animals +2, rocky ground -2, monster activity -2). You roll an 8 on the d20, resulting in a modified roll of 6, which falls in the DC (-1) to (-5) range, a minor failure. This means that there will be minor food shortages in the area and food prices increase 70% ($2d10 - 2 + 5 \times 10\%$). If the price increase for shortages seem too harsh, just remember that the resident in a typical fantasy world just can't go down to the local Food Lion and get some hot dogs and mac & cheese!

Level 1: Very General

Food

Raw Materials

Trade Goods

Level 1 uses very large categories, such as food, finished goods, etc. Usually determined once per game year to provide general background for the campaign. Here are some recommended DCs and Possible Circumstance Modifiers

Food

Including crops, livestock, fish, etc.

LAND TYPE: CHANGE VERY RARELY AND SLOWLY.	METHOD MODIFIER: SHARED AMONG CULTURAL GROUPS.	FORTUNE MODIFIER: CHANGE MOST FREQUENTLY AND OVER SMALLER REGIONS.
PLAINS/GRASSLANDS (DC 8)	DRAFT ANIMALS (+2)	BANDIT/MONSTER ACTIVITY (-2 TO -4)
LIGHT WOODS/LOW HILLS (DC 10)	CROP ROTATION (+2)	WEATHER (+2 FOR GOOD, -2 FOR POOR)
SWAMP/MOUNTAINS (DC 14+)	SIMPLE TOOLS (-2)	PLAGUE -2 TO -12
HEAVY WOODS /HIGHLANDS (DC 12)	IRON PLOW (+2)	BURDENSOME TAXES -2 TO -12

Raw Materials

Including lumber, stone, gold, silver, iron, etc.

LAND TYPE: CHANGE VERY RARELY AND SLOWLY.	METHOD MODIFIER: SHARED AMONG CULTURAL GROUPS.	FORTUNE MODIFIER: CHANGE MOST FREQUENTLY AND OVER SMALLER REGIONS.
VIRGIN WILDERNESS (DC 8)	GOOD TRADE ROUTE NEARBY, EG. RIVER, ROAD OR COASTLINE (+2)	TRANSPORT SYSTEM (FROM +2 FOR GOOD TO -2 FOR POOR)
SPARSELY POPULATED (DC 10)	SIMPLE TOOLS (-2)	WEATHER BLIZZARD ETC...
MODERATELY POPULATED (DC 12)	MANPOWER POOL (+2 FOR PLENTIFUL TO -2 FOR SCARCE)	WAR, BOYCOTT OR BLOCKADE (-5 TO -25)
HEAVILY POPULATED (DC 14)	ADVANCED TOOLS (+2)	BANDIT/MONSTER ACTIVITY (-2 TO -4)

Note: Typically, the more heavily populated an area is, the more the natural resources and raw materials have been depleted, forcing civilizations to go farther and farther afield to secure raw materials to keep their economies going.

Trade Goods

Including armor, weapons, spell components, wagons, ships, furniture, etc.

LAND TYPE: CHANGE VERY RARELY AND SLOWLY.	METHOD MODIFIER: SHARED AMONG CULTURAL GROUPS.	FORTUNE MODIFIER: CHANGE MOST FREQUENTLY AND OVER SMALLER REGIONS.
HEAVILY POPULATED (DC 8)	MANPOWER POOL (+2 FOR PLENTIFUL TO -2 FOR SCARCE)	TRANSPORT SYSTEM (FROM +2 FOR GOOD TO -2 FOR POOR)
MODERATELY POPULATED (DC 10)	GOOD TRADE ROUTE NEARBY, EG. RIVER, ROAD OR COASTLINE (+2)	MERCHANT CARAVAN, TRADE ROUTE (+5)
SPARSELY POPULATED (DC 12)	SIMPLE TOOLS (-2)	BANDIT/MONSTER ACTIVITY (-2 TO -4)
VIRGIN WILDERNESS (DC 18)	ADVANCED TOOLS (+2)	PIONEER SETTLEMENT OR PILGRIMAGE +2 TO +5

Note: Typically, it is much easier to obtain trade goods in heavily populated areas and more difficult in sparsely populated ones, the exact reverse of raw materials.

Level 2: More specific

Works well if you want to add more detail to the campaign without being overly complex. Uses specific categories, such as cattle, horses, grain, gems, gold, silver, wine, etc. For each campaign area, select 2-5 (1d4+1) major industries that the area is known for and assign a modifier (usually in the -2 to +6 range). Your list of trade items and industries should be pertinent to your campaign - "candles" probably shouldn't be a category, but "magic components" might be.

Once per year or trading season, you make a roll for each industry/trade item to see what the supply looks like. You can use shortages and over-supply as good adventure hooks. City A has a severe shortage of silver, but City B has a major surplus. If the PCs can get a shipment from B to A, they will be rich (of course, bandits, rival groups and orc tribes may all try to get the shipment themselves)!

In medieval settings currency is itself a commodity. Many of the exchanges between people might be resolved as 3sp worth of ducks for 3sp worth of pottery or through a combination of barter and trade. Merchants will try to convince characters to take trade over coin. Characters with actual coins might have more purchasing power than the local lord. It is very possible that 'customers' for character goods might have wealth but no coin to trade. "How many ducks will you take for that bastard sword?"

The regional price for a good will vary tremendously by supply and demand. A big supply of an item, sold at once, rapidly lowers its sale price per item. Conversely a great demand for an item drives up the price as more rare and demanding merchants have to be enticed into trade. 5 sprigs of mistletoe might be sold for 5 gld each but 10,000 sprigs might be lucky to get 1000gld. Low technology areas are usually barter economies where traders make a living by buying cheaply then slowly selling them at the highest price they can get. Don't forget that nobody has a freezer or the room to store more than they need right now.

Keep a list of representative items for your game economy, (it might look something like the table below). Where you set the DC higher, goods will be more easily found and prices will typically be cheaper. A low DC might increase the time it takes to buy or sell an item and make its price less attractive to the PC. Tables from region to region will differ creating opportunities for caravans etc...

Possible Industries/Trade Items

(by no means an exhaustive list):

ITEM	DC	ITEM	DC	ITEM	DC
GOLD		SILVER		GEMS	
GRAIN		HORSES		FISH	
LUMBER		CATTLE		SHEEP	
PIGS		STONE		CLOTH	
SILK		WINE		ALE	
ARMOR		WEAPONS		WAGONS	
SHIPS		FURNITURE		TAPESTRIES	
MAGIC COMPONENTS		EXOTIC MOUNTS		MERCENARY UNITS	

Recommended DCs: This will be highly variable, depending on your game world. I recommend a range for 8 (very routine) to 12 or 14 (very difficult). Don't make the base DC too hard, or no trade would ever get done! You can make it tougher with appropriate circumstance modifiers.

Taking 10, 20 etc... with enough to sell, characters may elect to spend time as merchants in order to get the best price. Taking 10 days or 20 days to oversee a sale might guarantee them a sale but it will also cost them upkeep for that time. Typically, its better to abstract this time or calculate a price for everything and hire a buying agent.

Possible Circumstance Modifiers

(in addition to those listed above):

GUILD RELATIONS (+2 FOR GOOD TO -2 FOR POOR)	TAXES (+2 FOR LIGHT TO -4 FOR HEAVY)
GOVERNMENT REGULATIONS (+2 FOR LIGHT TO -4 FOR HEAVY)	PEASANT REVOLT (-2)
BORDER SKIRMISH (-4)	OPEN WAR (-6)
RECENT FAMINE OR PLAGUE (-2 TO -6)	

Level 3: Very specific

Use if you want to have a detailed economic backdrop that is a major part of the campaign. Develop the industry/trade goods list for the campaign world, then assign a modifier for each area in each industry/trade good. So if you have 5 major countries and 12 industries/trade goods, you would assign a total of 60 modifiers. If you decide an area doesn't or can't produce a category (a desert city is unlikely to produce "fish", for instance), then they have to import it to get it and prices for those goods are likely to be 150% to 500% higher than normal.

If you are using a pseudo-medieval setting, you should also decide which guilds/trading houses/trading families/government institutions control or compete in the various trading areas (remember that the more competition in a given area, the lower the prices usually are).

For each category, determine success or failure. For each point the check exceeds the DC, the industry has the potential for a trading profit, determined by the number of people in the area that work in that industry (and your monetary system). To keep it easy, for basic materials (iron ore, food, lumber, etc), I usually use 1 gp x number of people in the industry x number the check exceeds the DC.

For example, Doria is a mining center, has 500 people working in the mining industry with a total modified DC of 11 for mining iron ore. You roll a 17 on the check. The potential profit is 1 gp x 500 people x 6 or 3,000 gp.

To realize the profit, Doria would need to make a "trading check" (new term - basically representing a trading caravan or trading fleet to move the goods to market). Again, you assign a DC and make the check.

DC RESULT	OUTCOME	EFFECT
1:	CRITICAL FAILURE (NATURAL/MAN MADE DISASTER - FIRE, FLOOD, WAR)	LOSS OF THE WHOLE SHIPMENT (0%)
DC (-6) +:	MAJOR FAILURE (SEVERE SHORTAGES, PRICES SKYROCKET)	PROFIT DECREASE BY 75% (25%)
DC (-1) TO (-5):	MINOR FAILURE (MINOR SHORTAGES, PRICES INCREASE)	PROFIT DECREASE BY 25% (75%).
DC (0) TO (+5):	REGULAR SUCCESS	NORMAL PROFIT(100%).
DC (+6) +:	MAJOR SUCCESS (SUBSTANTIAL SURPLUS, PRICES DECREASE, SIGNIFICANT EXPORTS)	PROFIT INCREASE BY 50% (150%).
20:	CRITICAL SUCCESS (MARKET GLUT, PRICES PLUMMET, MAJOR EXPORTS)	PROFIT * 1d4+1 (200% TO 500%)

The 1 gp per person in the industry works well for abstract items (ore, lumber, etc). For items listed in the PHB or DMG, work this a little differently. Use the industry check to see how much excess is produced (10%

for each point above the DC), then multiply by 1/10 of the item cost to determine potential profit.

For example, Doria also has many excellent dwarven armor smiths who make superior chain mail. They typically produce 100 suits in a year. The DC for Armor smithing in Doria is 10 and you roll a 14, so the smiths of Doria have produced 40% more armor this year, or 40 additional chain mail suits. Their potential profit 40×15 or 600 gp, subject to a successful trading check.

On the other hand, if an area fails checks for basic materials, like foodstuffs, you can reverse the procedure to see how much the rulers of the area need to fork over to keep their people from starving! I usually use $1 \text{ sp} \times$ per person \times the number you roll under the DC.

For example, Doria has a modified DC of 13 for food production and rolls a 7, a major failure! The city has 8,000 inhabitants, so Doria will need to come up with 48,000 sp, or 4,800 gold, to stave off starvation ($1 \text{ sp} \times 8,000 \text{ people} \times 6$ below the DC).

[Level 3](#) is really only for those that like to keep a very detailed campaign, but it is fairly easy to set all of this up on Excel spreadsheet and update it once a year. What I do is "net" the profit/costs for each area for the year (using Excel's sum operation). So I will have a good idea if there are going to be extra taxes in the area that year or if a big surplus is cause for a major celebration.

Level 4: Micro Level – PCs in Business

Part 1

This level is designed to go down to the micro level and allow PCs to either interact/run a guild/business or to participate in trading caravans/voyages. I will tackle the Guild/Business aspect first.

Guild/Business: The crafting rules on pp. 65/66 of the PHB are fine for crafting a single item, but what if you have a guild of 10 or 50 craftsmen? The system becomes a bit unwieldy. I recommend using the D20 trade mechanic to speed things up - using the following steps (we will use the Armorsmith's guild of Doria as an example):

1. Determine the average skill check result for all guild members. Let's assume the Doria's Armorsmith's guild has 25 smiths - 1 grandmaster smith (+13), 3 master smiths (+10), 6 journeymen (+7) and 15 apprentices (+4). Therefore, the guild's average skill check bonus is +5.8 - which rounds down to 5 (3E convention). Add this to the average d20 roll (10.5 rounded down to 10) for an average skill check number of 15.
2. Next, multiply the average skill check number \times the DC of the item being created. Let's say the guild is creating chain mail armor (DC 15). $15 \times 15 = 225$.
3. Then, divide the cost of the item being created, in silver pieces (chain mail armor, 150 gold = 1,500 silver) by the result from #2 above, resulting in 6.67 - rounded to 6. This is the number of weeks, on average, it takes 1 member of the guild to complete 1 suit of chain mail.
4. If we are making an annual check, divide 52 weeks (for a standard year) by 6 - 8.67 - which rounds to 8, the average number of suits each guild member can finish in a year. So the Doria Armorsmithing Guild, in an average year, can create 200 (8 suits \times 25 guild members) suits of chain mail armor.
5. Lastly, we use our D20 Trade Mechanic to see how profitable the Guild is for the year. This is their routine craft, so set the base DC to 10. There are no unusual circumstance modifiers (you could, if desired, add in modifiers like
 - low manpower (-2)
 - bandit activity (-4)
 - cheap iron ore (+2)
 - commission from the king (+2)

etc). Using the average skill check bonus determined in step 1 above (+5) you make the trade

check. Assume you roll a 9 on the check, for a total result of 14 (9+5). Increase the base profit by 10% for each point you exceed the skill check and reduce it by 15% for each point you fail by.

Assume a base profit of 10% of the item cost, so the guild typically makes 150 silver, or 15 gold on each suit. So if they just made their check, their profit would be 3,000 gold for the year. Since they exceeded the check by 4, their profit was 40% higher, or 4,200 gold!

If the trade check roll had been a 2, then the profit for the year would have only been 2,100 gold.

This may seem like a lot of math and it does take some calculations to get it going, but then you can have a line entry similar to this:

Doria Armorsmithing Guild (25 members, average skill check 15, base armorsmithing trade check 10, trade check bonus +5).

Let's look at another example, with the following guild:

Opal Shipwright's Guild (80 members, average skill check 15, base shipwright trade check 12, trade check bonus +5)

Assume you want to know how many warships (p. 151, DMG) they can build in a year and what their profit is.

A warship costs 250,000 silver. Assume the DC for creating a warship is 14. $250,000/210$ (ave. skill check 15 x DC 14). The result is 1,190.48 - round to 1,190. It would take 1 guild member 1,190 weeks to build 1 warship! Since we have 80 guild members, assume that all 80 are working on the ship. $1,190/80$ is 14.88 - round to 14, so it takes the guild 14 weeks to build one warship.

That means that the guild could build, on average, 3 warships in a year's time ($52/14$, round down=3). How much profit do they make for the year?

The trade check DC is 12, but there has been a severe wood shortage (-4). The roll is a 10 - resulting in a final trade check of 11, just short of the DC of 12. This means that their profit is 15% below normal. So their total profit is 63,750 silver or 6,375 gold (25,000 silver x 3 warships x .85%).

Part 2

This last part is about how the PCs interact with the Economic System. This can be done several ways.

1. PC's own a business

Sometimes, the PCs will want to own a business (usually in the crafting area). This is set up very similar to the way a guild is. Let's look at a quick example:

Larethin's Bows - Larethin is a bowyer and the PCs need a legitimate business front (or just want to make extra money). In addition to Larethin (+10 skill check modifier), the shop has one journeyman level bowyer (+7 skill check) and three apprentice level bowyers (+4 skill check).

(NOTE: As a general rule, for every three apprentices, you need a journeyman, for every three journeymen, you need a master and for every three masters, you need a grandmaster).

Since Larethin will be adventuring much of the time, we will need to do two stat blocks for the business, one with Larethin and one without. Our stat blocks look like this:

- Larethin present (Larethin's Bows - 5 members, ave. skill check 15, base bowyer trade check 12, base trade check bonus +5).
- Larethin not present (Larethin's Bows - 4 members, ave. skill check 14, base bowyer trade check 12, base trade check bonus +4).

Clearly, the shop will not be nearly as efficient when Larethin is out adventuring, but can still make some money. Let's assume that they make an equal amount of shortbows and longbows throughout the year (average cost of 525 silver). It takes the average employee 2 weeks ($525/15*12$, round down) to create a bow if Larethin is present and 3 weeks if he is not ($525/14*12$, round down).

(NOTE: When the PCs are running a business, it is usually better to do monthly checks, as opposed to annual checks)

If Larethin is present, the shop can produce 10 bows ($5/2 \times 4$ weeks, round down), equally split between

longbows and shortbows. If he is not present, they can only produce 5 bows $4/3 \times 4$ weeks, round down), DMs choice on whether the 5th bow is long or short. You would then make the trading check normally, with the average profit per bow being 52.5 silver pieces. In addition, when Larethin is not present, he has to pay an extra 25% of profits to his senior person as an extra management fee!

2. PCs are actively engaged in assisting the trading caravan/fleet/etc.

This is much more subjective, but in general, PCs with significant skill ranks (not total mods) in particular areas can have a positive impact on a trade mission.

For example, a PC with 5 or more ranks in wilderness lore could lend a +2 circumstance modifier to the trading check an overland trading caravan. A PC with 5 or more ranks in Knowledge: Navigation could do the same for a trading vessel. A PC with 5 or more ranks in Bluff or Diplomacy might be able to assist in trading negotiations, etc. At higher levels, spell casters might be able to enhance a trading check for an entire region (for instance, a high level druid casting a weather spell might add a +2 circumstance modifier to food production checks for an entire city or region).

Finally, you can use the trading check mechanic to pre-plan encounters on a journey instead of randomly determining them (whether or not they are involved in a trading mission). For instance, you determine that the overland journey from Doria to Restia is usually a DC 14. One of the PCs has 6 ranks in wilderness lore, giving a +2 circumstance modifier, but there has been unusually heavy bandit activity in the area, for a -4 circumstance modifier. You roll a 12, which is modified to a 10 (total of -2 circumstance modifier). I recommend that you have 1 encounter for every 2 points under the DC, so this roll would indicate 2 encounters during the journey - which you determine ahead of time instead of rolling for random encounters. Had the roll been 18, then you could just "fast forward" the party to Restia without repetitive rolling for each day of the journey.

Hopefully, you will find the Economic System useful at some level in your campaign.

Best wishes,

Old One