

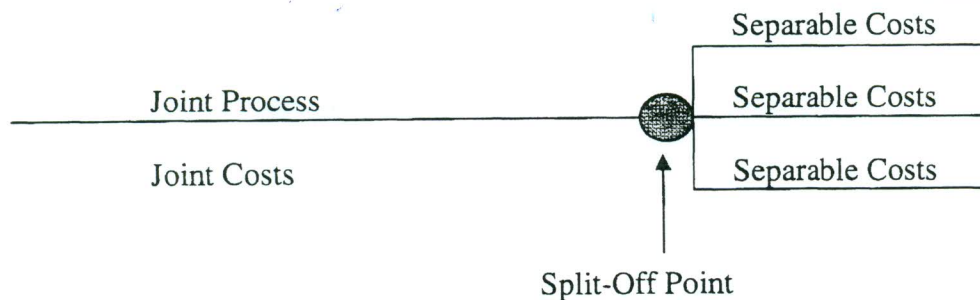
Joint Costing

A joint cost is the cost of a single process that yields multiple products simultaneously. Consider copper ore, which yields copper, silver, lead and zinc. The cost of extracting the ore and its distillation are considered "joint costs". They need to be incurred regardless of the company's goal – whether it desires to obtain copper only, or copper and one (or all) of the other minerals.

The point where a joint process ends and the individual products become identifiable is called the "Split-off Point". After this point, any manufacturing costs incurred on individual products can be clearly assigned to a specific product. These costs incurred after split-off are called "Separable Costs."

Examples

<u>Industry</u>	<u>Core Product</u>	<u>Joint Products</u>
Agriculture	Raw Milk	Cream, Liquid Skim
Mining	Coal	Coke, Gas, Benzole, Tar, Ammonia
Semiconductor Manufacturing	Silicon Chips	Chips of different Quality, Speed, Life, Tolerance



If all products that result from a joint process have significant economic value, they are all considered joint products. If one product is of relatively minor value, it is considered a "By-product." Over time, a product can change classification if its value increases or decreases.

There are a number of reasons to allocate the joint cost to the various products that result from the joint process. The most obvious one is inventory costing. In order to put a value on inventory and cost of goods sold, the full manufacturing cost of each product needs to be determined, for tax returns and financial statements. Other reasons for allocating joint costs include:

1. Cost reimbursement contracts that only include a portion of the company's business.
2. Insurance settlement
3. Rate regulation

Joint Costing....Continued

There are three approaches to joint cost allocation:

- a. Using market-based data (NRV, Sales Value at Split-Off)
- b. Using physical data (Volume or Weight.)
- c. By-Product method.

A) **Net Realizable Value (NRV)** – This allocates joint costs based on the relative net realizable value of the products (expected final sales value of production less costs after split-off, which are production and marketing.) The various joint products' NRVs are summed together and each is taken as a percentage of the total. This relative percentage is used to assign a portion of the joint costs to the individual product inventory.

Sales Value at Split-Off – This allocates joint costs based on the relative sales value of production at the split-off point. This method allocates costs based on the ability of the product to contribute revenue. If there are no market prices for a product at its split-off point, then an estimated NRV would have to be determined. Ideally, the sales value at split-off should be used as a market basis to assign joint costs, since the NRV method simply attempts to estimate this value, and an objective market value is always preferable.

B) **Physical Method** – This allocates joint costs based on the relative physical proportions of production (volume, weight, etc.) at split-off. Sum the units or kilograms and take each as a percentage of the total. This percentage is then used to assign a share of the joint costs to each product. Another approach would be to divide the joint cost by the total number of units (weight, volume) produced. This gives a joint cost per unit and can be multiplied by units of each product produced to assign joint costs to inventory.

C) **By-Product Method** – A by-product is considered to have insignificant economic value. As such, this method assigns sufficient joint costs so that it achieves a ZERO gross-profit margin. Therefore: the NRV of the by-product production is determined and this value of joint costs are then assigned to the by-product. In equation format:

$$\text{Sales Value of Production} - \text{Separable Costs (mfg + selling)} = \text{NRV} \quad \textbf{AND}$$

NRV = the by-product's share of joint costs, so that the GP is zero.

Accounting for By-Products

Production Method – This recognizes by-products in the financial statements at the time of their production. The estimated NRV of by-products is the amount that goes into inventory for the by-products, while the remaining joint costs go into inventory for the main product.

Time of Sale Method – This method makes no journal entries until a by-product sale occurs. The sales value of the by-product is used to reduce the cost of goods sold for the main product.

Examples of Three Joint Costing Methods

Chassin Company produces three products after a common processing operation. The joint process results in 200 units of A, 500 of B and 300 of C. Both A and C undergo further processing. Chassin has the following costs and selling prices:

Product	Costs			Selling Price per Unit
	Joint	Further Processing	Selling	
A		6000	4000	200
B			2000	120
C		5400	3000	68
TOTAL	60,000	11400	9000	

In chart format below, costs and selling prices are displayed.

\$60,000 Joint Costs		\$6,000 mnfg.....\$4,000 selling	A	Selling Price/Unit 200
	\$2,000 selling	B	120
		\$5,400 mnfg.....\$3,000 selling	C	68

1. Net Realizable Value Method (NRV):

Sales Value of Production			Less Costs After Split-Off	NRV	% of Total
A	200*\$200	= \$40,000	\$10,000	\$30,000	30.00%
B	500*120	= \$60,000	\$2,000	\$58,000	58.00%
C	300*68	= \$20,400	\$8,400	\$12,000	12.00%
				\$100,000	100.00%

	Product A		Product B		Product C	
Joint Sep Mnfg	\$18,000	(\$60,000*.3)	\$34,800	(\$60,000*.58)	\$7,200	(\$60k*.12)
	\$6,000		\$0		\$5,400	
	\$24,000		\$34,800		\$12,600	
To COGS		\$24,000		\$34,800		\$12,600
	\$0		\$0		\$0	

2. Physical Method (# of Units)

Product	# Units	% of Total
A	200	20.00%
B	500	50.00%
C	300	30.00%
	1000	100.00%

	Product A		Product B		Product C	
Joint	\$12,000	(\$60,000*.2)	\$30,000	(\$60,000*.50)	\$18,000	(\$60k*.30)
Sep Mnfg	\$6,000		\$0		\$5,400	
	\$18,000		\$30,000		\$23,400	
To COGS		\$18,000		\$30,000		\$23,400
	\$0		\$0		\$0	

3. Using Product C as a By-Product, and A and B with NRV

If C is a by-product, then its existence is just an outcome of the purposeful production of products A and B. Therefore, we assign just enough joint costs to Product C to leave it with 0 profit.

Product C	Less: Costs After Split- Off	Joint Costs
# Units * Selling Price		Assigned
300*\$68 = \$20,400	\$8,400	=\$12,000

Thus, Products A and B will have the remaining joint costs (\$60,000-\$12,000=\$48,000) assigned to them.

Now: NRV for Products A and B

	Sales Value of Production		Less Costs After Split- Off		NRV	% of Total
A	200*\$200	=\$40,000	\$10,000		\$30,000	34.09%
B	500*120	=\$60,000	\$2,000		\$58,000	65.91%
					\$88,000	100.00%

	Product A		Product B		Product C	
Joint	\$16,320	(\$48,000*.34)	\$31,680	(\$48,000*.66)	\$12,000	
Sep Mnfg	\$6,000		\$0		\$5,400	
	\$22,320		\$31,680		\$17,400	
To COGS		\$22,320		\$31,680		\$17,400
	\$0		\$0		\$0	