

Purchase price allocation study

December 2018

Table of Contents

• Introduction	3
• Criteria and methodology	4
• Statistics	
• Allocation based on transaction size	6
• Allocation across industries	7
• Allocation across intangibles	8
• Allocation across industries and intangibles	9
• Useful life per intangible asset	12
• Useful life per intangible asset and industry	13
• Disclaimer	14
• About PPAlyser	15

Introduction

- We are proud to present the seventh edition of our Purchase Price Allocation study. This study presents statistics on publicly disclosed purchase price allocation studies and economic useful lives for the years 2016 and 2017. The source of this analysis is the PPAlyser database. PPAlyser is a subscription database which contains financial details of publicly disclosed purchase price allocations, discount rates and impairments. Besides purchase price allocation data, PPAlyser also provides data on economic useful lives. For more information, visit www.ppanalyser.com.
- This analysis presents a selection of statistics. These include statistics for each industry, region and type of intangible. In addition you will find statistics on economic useful lives.
- Should you have any questions or comments, please do not hesitate to contact us, info@ppanalyser.com.

Criteria & Methodology

- The source used for this study is the [PPAnalyser](#) database. PPAAnalyser includes purchase price allocation data that was identified by searching for purchase price allocations disclosed in annual and quarterly reports.
- For the purpose of this study a selection of PPA's included in the database was made based on the following criteria:
 - Year: 2016 and 2017
 - Financial information disclosed: only PPAs were included that disclosed both the purchase price as well as the allocation of intangibles.
- Intangibles identified in the PPAs and discount rates were assigned to one of the following intangible categories:
 - Marketing related intangible assets
 - Customer related intangible assets
 - Artistic related intangible assets
 - Contract related intangibles
 - Technology related intangibles
 - Research & Development related intangibles
- All amounts were converted to USD using a single exchange rate for 2016 and 2017.
- When analysing the proportion of tangible assets, intangible assets and goodwill compared to total assets, total assets is determined by the purchase price net of liabilities.

Criteria & Methodology

- We classified the PPAs and impairments into the following industry categories:
 - Agriculture, forestry and fishing
 - Construction
 - Finance, insurance and real estate
 - Manufacturing
 - Mining
 - Public administration
 - Retail trade
 - Services
 - Transportation and public utilities
 - Wholesale trade
- We segmented the allocation results across seven size categories (in USD x millions):
 - > 1,000
 - 500 - 1,000
 - 250 - 500
 - 100 - 250
 - 50 - 100
 - 25 - 50
 - < 25
- Consolidated statistics were determined based on percentages of the individual PPAs (i.e. not weighted).
- For categories with less than 10 observations the results are regarded as not significant and are not further analysed.
- For economic useful lives a distinction is made between intangibles with definite and indefinite lifetimes. Both are disclosed and analysed separately.

Statistics

Allocation based on transaction size

- The median purchase price in the year 2017 increased by 3.3% compared to the year 2016, from approximately USD 51.5 to 53.2 million. The number of transactions decreased in 2017, however it should be noted that transactions that occurred in 2017 are typically not all disclosed in the annual reports of 2017, therefore a reporting delay exists.
- Although an increase in the overall median purchase price can be observed, the purchase price of transactions between USD 100 and 250 million and between USD 0 and 25 million decreased with 2.4% and 2% respectively. The median purchase price of transactions larger than 1 billion experienced an increase of 8.1%. The largest increase is observed in transactions between USD 500 and 1,000 million, the median purchase price increased with 14.1%.
- The majority of the purchase price allocations included in this study are published in US annual reports. For 2017, the proportion of US related PPAs decreased from 79.1% to 56.8% while the proportion of European PPAs increased from 6.8% to 24.1%. This is, among others, due to an increased focus on European PPAs of the PPAnalyser team.

Comparison	Number of transactions			
	2017		2016	
	#	% of total	#	% of total
United States	193	56.8%	512	79.1%
Canada	21	6.2%	31	4.8%
Europe	82	24.1%	44	6.8%
Other	44	12.9%	60	9.3%
Total	340	100%	647	100%

	Transactions		Median PP (x 1000)		
	2017	2016	2017	2016	% change
PP > 1,000	26	65	2,737,893	2,532,200	8.1%
500 < PP < 1,000	27	29	703,000	615,900	14.1%
250 < PP < 500	28	57	353,663	348,292	1.5%
100 < PP < 250	53	99	154,200	157,984	-2.4%
50 < PP < 100	45	78	74,401	70,720	5.2%
25 < PP < 50	46	61	35,958	35,590	1.0%
PP < 25	115	258	8,930	9,114	-2.0%
Total	340	647	53,167	51,490	3.3%

Statistics

Allocation across industries

- The median purchase price of all transactions increased in 2017 to approximately USD 53.2 million (3.3%).
- Most transactions are observed in the manufacturing sector, with 32.1% of the total amount of the transactions in 2017. The second largest sector is the services sector with 29.7% of the total.
- When looking at the median purchase price, the most significant increase can be observed in the wholesale trade industry (543%) and the most significant decrease in the mining industry (75.3%).

	Number of transactions				Median PP (x 1000)		
	2017	% of total	2016	% of total	2017	2016	% change
All industries	340	100%	647	100%	53,167	51,490	3.3%
Agriculture, forestry and fishing			1	0.2%		51,490	
Construction	8	2.4%	5	0.8%	25,940	11,283	129.9%
Finance, insurance and real estate	65	19.1%	104	16.1%	113,000	57,675	95.9%
Manufacturing	109	32.1%	240	37.1%	87,000	70,970	22.6%
Mining	13	3.8%	13	2.0%	59,638	241,121	-75.3%
Public administration			2	0.3%		89,650	
Retail trade	9	2.6%	29	4.5%	25,952	32,517	-20.2%
Services	101	29.7%	182	28.1%	33,307	34,079	-2.3%
Transportation and public utilities	24	7.1%	47	7.3%	80,988	68,650	18.0%
Wholesale trade	11	3.2%	24	3.7%	117,600	18,288	543.0%

Statistics

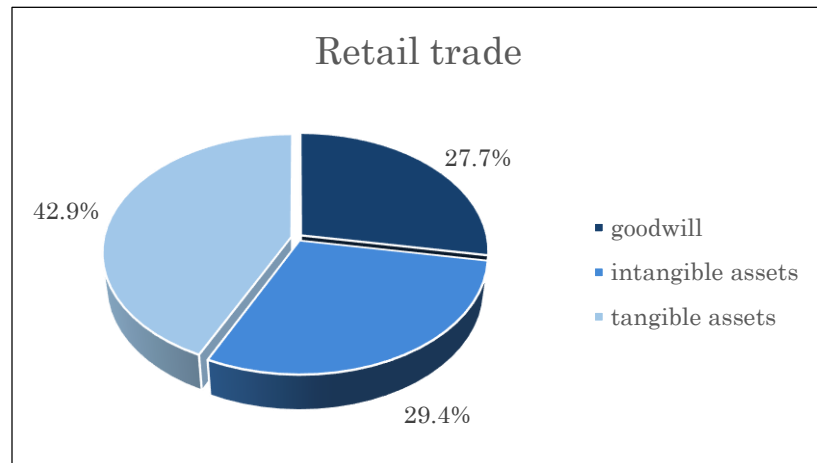
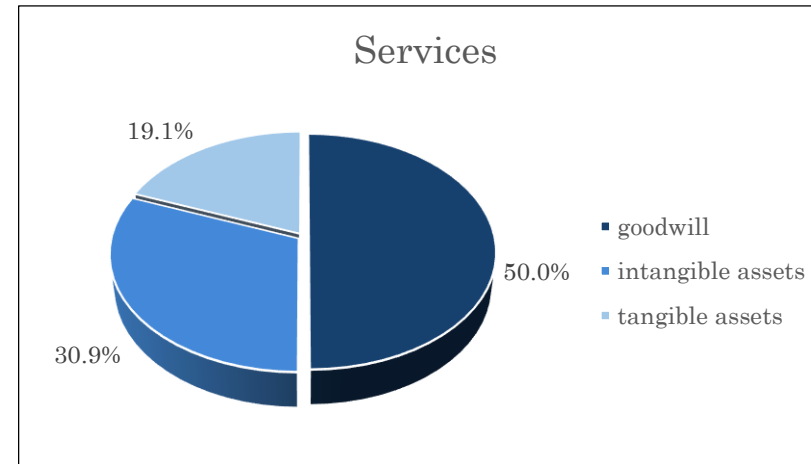
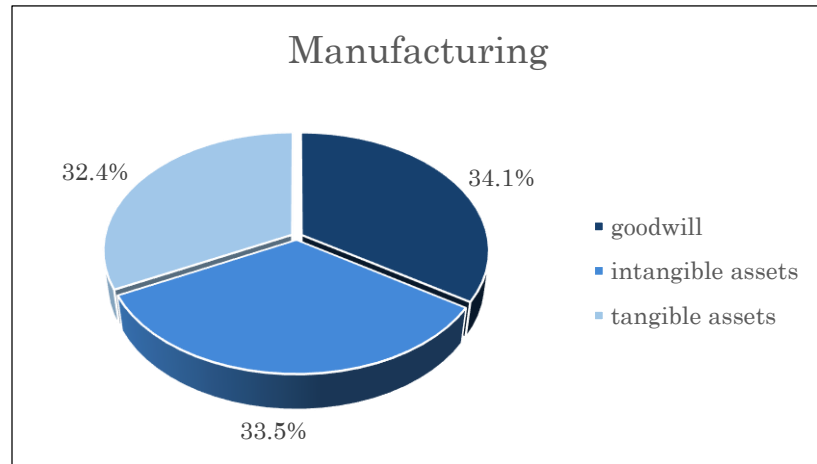
Allocation across intangibles

- Overall, the proportion of intangible assets (incl. goodwill) in relation to total assets decreased across all asset class sizes (5% on average). The largest increase can be observed for transactions with assets values between USD 100 and 250 million (4%) and the largest decrease can be observed for transactions with asset values larger than USD 1 billion (13.4%).
- The total proportion of intangible assets (excl. goodwill) in relation to total assets decreased with 6.4% on average.
- The total proportion of goodwill in relation to total assets increased slightly with 1.4% on average.

	Intangible assets as a % of total assets			Goodwill as a % of total assets			Total intangibles as a % of total assets		
	2017	2016	% change	2017	2016	% change	2017	2016	% change
Total assets > 1,000	22.2%	30.8%	-8.6%	26.0%	30.8%	-4.8%	48.2%	61.6%	-13.4%
500 < total assets < 1000	22.9%	29.1%	-6.2%	32.4%	37.8%	-5.4%	55.3%	66.9%	-11.6%
250 < total assets < 500	22.3%	30.1%	-7.8%	44.5%	36.3%	8.2%	66.8%	66.4%	0.4%
100 < total assets < 250	29.9%	30.1%	-0.2%	41.5%	37.3%	4.2%	71.4%	67.4%	4.0%
50 < total assets < 100	25.5%	36.7%	-11.2%	40.3%	36.2%	4.1%	65.8%	72.9%	-7.1%
25 < total assets < 50	30.2%	34.0%	-3.8%	42.4%	38.2%	4.2%	72.6%	72.2%	0.4%
Total assets < 25	32.7%	39.6%	-6.9%	36.7%	37.2%	-0.5%	69.4%	76.8%	-7.4%
Average			-6.4%			1.4%			-5.0%

Statistics

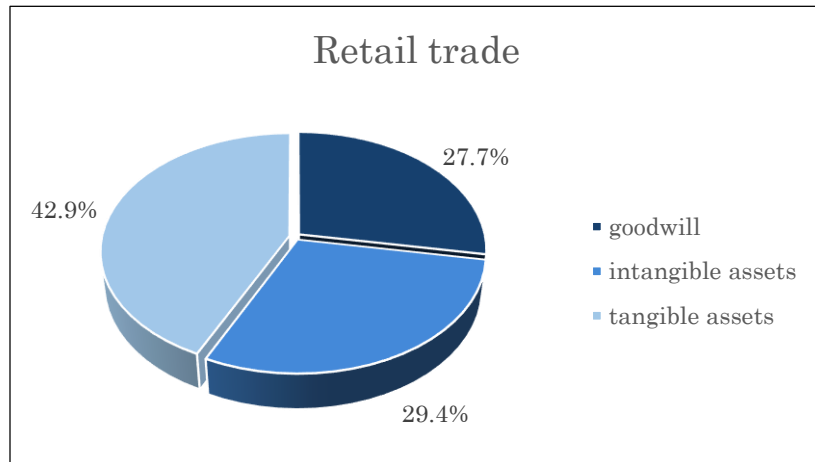
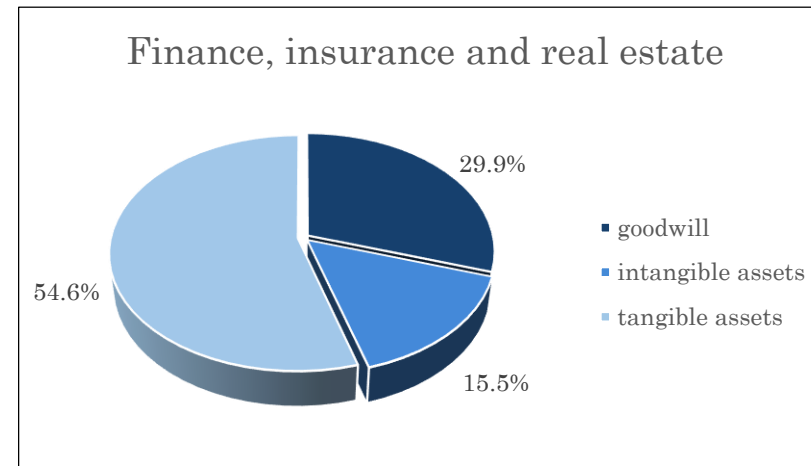
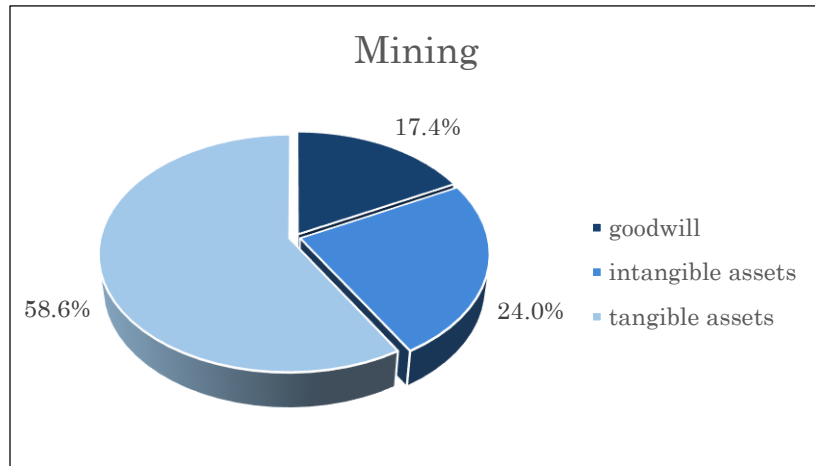
Allocation across intangibles & industries (1/3)



- The following three slides discuss the proportion of intangibles, tangibles and goodwill compared to total assets across industries.
- The industries with the highest proportion of intangible assets compared to total assets are manufacturing, services and retail trade.
- For the manufacturing industry, 34.1% of total assets is allocated to intangible assets.
- The services industry has the highest share of goodwill among all industries (50%).

Statistics

Allocation across intangibles & industries (2/3)



- Mining, finance, insurance and real estate and retail trade have the highest proportion of tangible assets compared to total assets among all industries.
- The highest proportion of tangible assets is identified in the mining industry (58.6%).

Statistics

Allocation across intangibles & industries (3/3)

- The most frequently identified intangibles are marketing, customer and technology related intangibles. Artistic¹, contract and R&D related intangibles are observed less frequently.
- The proportion of marketing related intangibles to total assets is highest in the retail trade (6.2%) and manufacturing (4%) industry.
- The proportion of customer related intangibles to total assets is highest in the transportation and public utilities (17.8%) and the construction (11.3%) industry.
- The proportion of technology related intangibles to total assets is highest in the services industry (12.6%).

2017	Count						Intangible as a % of total assets					
Comparison	Marketing	Customer	Artistic	Contract	Technology	R&D	Marketing	Customer	Artistic	Contract	Technology	R&D
Construction	1	6					0.7%	11.3%				
Finance, insurance and real estate	14	16		12	6		1.1%	2.7%		2.5%	0.8%	
Manufacturing	44	53	1	7	31	11	4.0%	8.8%	0.7%	1.7%	3.1%	2.2%
Mining	1	5		3	1		0.0%	6.2%		7.2%	1.2%	
Public Administration												
Retail trade	5	3		2	2		6.2%	5.0%		12.3%	0.8%	
Services	45	60		7	58	2	2.7%	10.5%		0.6%	12.6%	0.1%
Transportation and public utilities	6	14		1	5		2.1%	17.8%		0.1%	2.7%	
Wholesale trade	1	2			1		0.1%	4.5%			0.1%	
Total	117	159	1	32	104	13						

Statistics

Useful life per intangible asset

- The number of PPAs with a disclosed economic useful life decreased with approximately 10% (from 47.1% in 2016 to 36.5% in 2017).
- In 2017 the highest economic useful life was observed for customer related intangibles with a median of 7 years.
- When comparing 2017 to 2016, a few changes can be observed. The median economic useful life of contract and marketing related intangibles decreased, with 3 and 1 year(s) respectively. The median economic useful life of technology related intangibles stayed the same.

Comparison	2017		2016	
	#	%	#	%
Total PPA's	340	100%	647	100%
Total PPA's with disclosed useful life	124	36.5%	305	47.1%

Interquartile range (in years)	2017			2016		
	Lower	Median	Upper	Lower	Median	Upper
Marketing related intangible assets	1.0	4.0	7.0	3.0	5.0	13.8
Customer related intangible assets	2.6	7.0	14.2	2.0	6.0	12.0
Artistic related intangible assets					3.0	
Contract related intangible assets	1.0	2.0	8.6	1.1	5.0	16.0
Technology related intangible assets	4.0	5.0	7.0	3.0	5.0	7.0
R&D related intangible assets		Indef.		Indef.	Indef.	Indef.

Statistics

Useful life per intangible asset and industry

- The economic useful life attributed to marketing related intangibles is highest in the construction industry (10 years) and lowest in the finance, insurance and real estate and wholesale trade industry (1 year).
- The economic useful life attributed to customer related intangibles is also highest in the construction industry (23 years) and lowest in the wholesale trade industry (4.5 years).
- The economic useful life attributed to technology related intangibles is highest in the manufacturing industry (7 years) and lowest in the finance, insurance and real estate industry (2.3 years).

	Marketing	Customer	Artistic	Contract	Technology	R&D		Marketing	Customer	Artistic	Contract	Technology	R&D
2017	PPA's with disclosed useful life							Median useful life (in years)					
Agriculture, forestry and fishing													
Construction	1	1					10.0	23.0					
Finance, insurance and real estate	6	6		7	2		1.0	8.0			8.5	2.3	
Manufacturing	25	35		4	24	1	4.0	7.0			1.0	7.0	Indef.
Mining		2		1	1			9.0			0.8	3.0	
Public administration													
Retail trade	1	2		1	1		5.0	6.5			1.0	4.0	
Services	23	40		4	35		3.5	5.0			3.7	5.0	
Transportation and public utilities	6	9		1	3		5.0	7.0			3.0	1.0	
Wholesale trade	1	2			1		1.0	4.5				5.0	
Total	63	97		18	67	1	Median	4.0	7.0		2.0	4.0	Indef.

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