Value Relevance of Acquired Intangible Assets

Wayne R. Landsman
University of North Carolina at Chapel Hill

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Accounting for Intangibles

- In 2001, FASB issued SFAS 141 and SFAS 142
- SFAS 141 requires most acquired intangibles be recognized as assets applying fair value measurement
- Intangibles can be acquired through business combinations or direct purchase
- Firms added billions of dollars of assets to balance sheets

Accounting for Intangibles

- An intangible asset is a non-physical asset that is expected to provide future economic benefits to the entity that owns or controls it.

- For recognition purposes, it must be identifiable and non-monetary.

- The standards distinguish between definite and indefinite intangible assets.

Economic lifetime of Intangibles

- Definite
  - Assets have a finite lifespan
  - Include patents, computer software, licenses, franchises, and certain trademarks

- Indefinite
  - Assets have a infinite lifespan
  - Include in-process R&D, (FCC) licenses, and most trademarks

Current FASB/IASB Proposals

- Concerns with intangibles' fair values being difficult to verify
- Has led to proposals to subsume certain individual intangible assets—e.g., customer related intangible assets and non-compete agreements—into goodwill
- FASB received numerous comment letters, reflecting what changes, if any, are necessary to improve intangible asset accounting
- IASB has launched a new project on the review for the "accounting for intangibles" in April 2024

Valuation equations – Definite and Indefinite Intangibles

- Valuation equation is based on the Ohlson (1999) valuation model. It expresses the firm's equity market value (MVE) as a linear combination of equity book value (BVE) and abnormal earnings (NI^a):

$$MVE_t = \beta_0 + \beta_1 BVE_t + \beta_2 NI_t^a + e_t$$

- The expanded model we estimate permits the accruals component of earnings to have a different valuation coefficient from cash flow. More importantly for our research question, we disaggregate BVE into its relevant components, permitting definite intangibles, indefinite intangibles, and goodwill to have separate valuation coefficients.

$$MVE_t = \beta_0 + \beta_1 BVE\_adj_t + \beta_2 NI_t^a + \beta_3 Accruals_t + \beta_4 Def\_Int_t + \beta_5 Indef\_Int_t + \beta_6 Goodwill_t + e_t$$

Main Findings:

-Def_Int
-Indef_Int
-GW

		1	2	3	4
		Unconstrained estimation	Constrained estimation	Unconstrained estimation	Constrained estimation
		complete sample (2003-2018)	complete sample (2003-2018)	Firms with intangibles sample (2003-2018)	Firms with intangibles sample (2003-2018)
VARIABLES	Prediction	MVE	MVE	MVE	MVE
BVE_adj	+	1.269	1.114	1.267	1.100
		(0.000)	(0.000)	(0.000)	(0.000)
Def_Int	+	2.247	1.880	2.152	1.708
		(0.000)	(0.000)	(0.000)	(0.000)
Indef_Int	+	0.766	0.467	0.781	0.508
		(0.000)	(0.006)	(0.000)	(0.003)
Goodwill	+	1.453	1.473	1.480	1.479
		(0.000)	(0.000)	(0.000)	(0.000)
Time FE		YES	YES	YES	YES
Industry FE		FF12	FF12	FF12	FF12
R-Squared		0.565	0.558	0.575	0.568
F-Test		99.87	48.05	90.96	47.35
		(0.000)	(0.000)	(0.000)	(0.000)
Observations		21,646	21,646	15,873	15,873

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Valuation equations—Intangible Asset Classes

- We further disaggregate definite and indefinite intangible assets into different asset classes specified by FASB and IASB: tech, customer, contract, and marketing.
- Tech intangibles include patents, developed technology or software and are core factors that affect a firm's competitive position within its industry.
- Customer intangibles contains customer lists and relationships and customer-ordered backlog.
- Contract intangibles contains many non-customer contractual relationships such as franchises, licenses, management agreements, favorable leases, and water-, land- and emission rights.
- Marketing intangibles consists mostly of trademarks and tradenames, brands, mastheads, and non-compete agreements.

Valuation equations—Intangible Asset Classes

$$MVE_t = \beta_0 + \beta_1 BVE\_adj_t + \beta_2 NI_t^a + \beta_3 Accruals_t + \beta_4 Tec\_Def_t + \beta_5 Tech\_Indef_t + \beta_6 Customer_t + \beta_7 Contract\_Def_t + \beta_8 Contract\_Indef_t + \beta_9 Marketing\_Def_t + \beta_{10} Marketing\_Indef_t + \beta_{11} Other_t + \beta_{12} Goodwill_t + e_t$$

Additional Findings:

-Def_Int
  *Tech
  *Customer
  *Contract
  *Marketing

-Indef_Int
  *Tech
  *Contract
  *Marketing

-Other

-GW

		1	2	3	4
		Unconstrained estimation	Constrained estimation	Unconstrained estimation	Constrained estimation
		complete sample (2003-2018)	complete sample (2003-2018)	Firms with intangibles sample (2003-2018)	Firms with intangibles sample (2003-2018)
VARIABLES	Prediction	MVE	MVE	MVE	MVE
Tech_Def	+	5.186	6.218	5.125	5.789
		(0.000)	(0.000)	(0.000)	(0.000)
Tech_Indef	+	15.495	0.312	15.448	1.554
		(0.000)	(0.862)	(0.000)	(0.408)
Customer	+	1.944	1.527	1.825	1.388
		(0.000)	(0.000)	(0.000)	(0.000)
Contract_Def	+	1.947	1.148	2.011	1.282
		(0.096)	(0.266)	(0.088)	(0.223)
Contract_Indef	+	0.925	0.716	0.984	0.792
		(0.001)	(0.013)	(0.000)	(0.006)
Marketing_Def	+	2.037	-1.129	2.028	-0.603
		(0.177)	(0.434)	(0.176)	(0.674)
Marketing_Indef	+	1.139	0.829	1.095	0.802
		(0.000)	(0.006)	(0.000)	(0.009)
Other	+	4.264	2.333	4.014	2.222
		(0.001)	(0.070)	(0.003)	(0.085)
Goodwill	+	1.455	1.483	1.492	1.494
		(0.000)	(0.000)	(0.000)	(0.000)
Time FE		YES	YES	YES	YES
Industry FE		FF12	FF12	FF12	FF12
R-Squared		0.571	0.562	0.582	0.573
F-Test		49.84 (0.000)	23.26 (0.000)	49.28 (0.000)	20.84 (0.000)
Observations		21,646	21,646	15,873	15,873

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Cash Flow Prediction equations

- We estimate versions of operating cash flow (CFO) prediction equations at lags of 1, 2, and 3 years, i.e., *k* is 1, 2, or 3.

$$CFO_t = a_0 + a_1 CFO_{t-k} + a_2 BVE\_adj_{t-k} + a_3 Def\_Int_{t-k} + a_4 Indef\_Int_{t-k} + a_5 Goodwill_{t-k} + e_t$$

- The equation is one of the forecasting equations that forms part of the system of equations the underlie the Ohlson valuation model. Therefore, as before, we estimate the cash flow prediction equations using both constrained and unconstrained models.

Cash Flow Prediction

	Unconstrained estimation			*Constrained estimation*		
	1	***2***	***3***	***1***	***2***	***3***
VARIABLES	***1-year*** *Cash Flows*	***2-year*** *Cash Flows*	***3-year*** *Cash Flows*	***1-year*** *Cash Flows*	***2-year*** *Cash Flows*	***3-year*** *Cash Flows*
Cash Flows	0.683	0.633	0.594	0.682	0.639	0.601
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BVE_adj	0.046	0.051	0.056	0.058	0.063	0.065
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Def_Int	**0.071**	**0.074**	**0.080**	**0.128**	**0.149**	**0.147**
	(0.000)	**(0.000)**	**(0.002)**	**(0.000)**	**(0.003)**	**(0.000)**
Indef_Int	**0.076**	**0.078**	**0.085**	**0.090**	**0.094**	**0.104**
	(0.000)	**(0.000)**	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**
Goodwill	0.058	0.071	0.079	0.094	0.112	0.123
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Time FE	YES	YES	YES	YES	YES	YES
Industry FE	FF12	FF12	FF12	FF12	FF12	FF12
R-Squared	0.644	0.582	0.509	0.634	0.569	0.496
Observations	21,646	19,213	16,946	21,646	19,213	16,946

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Cash Flow Prediction

	Unconstrained estimation			*Constrained estimation*		
	1	*2*	*3*	*1*	*2*	*3*
VARIABLES	***1-year*** *Cash Flows*	***2-year*** *Cash Flows*	***3-year*** *Cash Flows*	***1-year*** *Cash Flows*	***2-year*** *Cash Flows*	***3-year*** *Cash Flows*
Cash Flows	0.685	0.631	0.589	0.686	0.632	0.594
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BVE_adj	0.045	0.039	0.043	0.056	0.048	0.051
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tech_Def	**0.128**	**0.140**	**0.185**	**0.244**	**0.196**	**0.193**
	(0.001)	**(0.003)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.003)**
Tech_Indef	**0.439**	**0.235**	**0.166**	**0.522**	**0.398**	**0.478**
	(0.004)	**(0.014)**	**(0.192)**	**(0.001)**	**(0.000)**	**(0.326)**
Customer	0.026	-0.018	-0.033	0.074	0.051	0.048
	(0.295)	(0.254)	(0.081)	(0.003)	(0.000)	(0.000)
Contract_Def	**0.146**	**0.058**	**0.080**	**0.181**	**0.070**	**0.092**
	(0.004)	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Contract_Indef	**0.123**	**0.031**	**0.016**	**0.136**	**0.042**	**0.026**
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Marketing_Def	0.038	-0.002	-0.094	0.080	0.121	-0.021
	(0.692)	(0.983)	(0.259)	(0.405)	(0.048)	(0.000)
Marketing_Indef	**0.056**	**0.046**	**0.057**	**0.079**	**0.058**	**0.069**
	(0.003)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Other	0.217	0.045	-0.025	0.221	0.026	-0.035
	(0.016)	(0.220)	(0.569)	(0.014)	(0.440)	(0.000)
Goodwill	0.062	0.080	0.092	0.101	0.116	0.130
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Time FE	YES	YES	YES	YES	YES	YES
Industry FE	FF12	FF12	FF12	FF12	FF12	FF12
R-Squared	0.644	0.582	0.511	0.634	0.573	0.511
Observations	21,646	19,213	16,946	21,646	19,213	16,946

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Further readings on intangible assets

- The findings are based on the new version of Landsman, Liss, Sievers, **The Pricing of Acquired Intangibles**
  TRR 266 Accounting for Transparency Working Paper Series No. 65, Available at SSRN: http://dx.doi.org/10.2139/ssrn.3942328

- The old version of the paper can be downloaded here:
  https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3942328

Contact information

Wayne Landsman, PhD

University of North Carolina at Chapel Hill
Kenan Flagler Business School
KPMG Distinguished Professor of Accounting
McColl Building 4013
CB 3490
Chapel Hill, NC
27599-3490
T +1 919 962 3221
E Wayne_Landsman@unc.edu

Alexander Liss

Paderborn University
Fakultät für Wirtschaftswissenschaften
Lehrstuhl für Internationale Rechnungslegung
Warburger Straße 100
33100 Paderborn
T +49 5251 60 5558
E alexander.liss@uni-paderborn.de

Prof. Dr. Soenke Sievers

Paderborn University
Fakultät für Wirtschaftswissenschaften
Lehrstuhl für Internationale Rechnungslegung
Warburger Straße 100
33100 Paderborn
T +49 5251 60 3377
E soenke.sievers@uni-paderborn.de

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