

Equities

23 April 2012 | 19 pages

Takeda Pharmaceutical (4502)

Finding ways around the patent cliff

- Company Update
- Target Price Change
- Estimate Change

- **Heading for resurgence** — We regard Takeda as the only company in our coverage whose earnings are weakening due to patent expiries that also has a subsequent growth scenario. While we see earnings bottoming in FY3/13, we think investors remain wary of the risk of sluggish earnings or a dividend cut. We expect diabetes treatment SYR-322 to be approved on April 25, the medium-term plan to be announced May 11 is likely to map out the earnings recovery, and Takeda has three blockbuster candidates in its pipeline, so we think the time is approaching for doubts about the earnings recovery to be replaced by hope. We raise our forecasts to reflect FY3/13 tax refunds (see our April 9 memo, [Takeda Pharmaceutical \(4502\) - Transfer-price tax being refunded](#)) and a contribution from the recently-announced acquisition of URL Pharma (see our April 11 memo, [Takeda Pharmaceutical \(4502\) - Acquiring US drugmaker URL; could strengthen presence in gout treatments](#)). These revisions trigger a ¥100 increase to our target price to ¥4,400. Given Takeda's likely resurgence, we recommend action ahead of a forthcoming change in consensus.
- **Earnings cycle and valuations** — Figure 1 inside shows our analysis of growth cycle and valuation patterns for Japanese pharma stocks. Optimal timing for entry is when a company has launched a new global drug and formerly Japan-dependent earnings enter a major growth period, which is where we perceive Mitsubishi Tanabe to be now. However, patent expiry risk looms during growth phases, and if the next growth engine is unclear value-based metrics and dividend yield then become the basis of valuation. We think valuations turn upward again on the emergence of a growth theme when the negative impact of patent expiries begins to peter out and that Astellas has entered this phase. We believe Takeda will be next.
- **New drug pipeline promising** — Takeda has three promising new drug candidates: the prostate cancer treatment TAK-700 (release expected in 2015, peak sales expected at ¥100bn), the diabetes treatment TAK-875 (2016, ¥40bn), and the cancer treatment MLN9708 (2015, ¥100bn). We expect aggregate peak annual sales for these three, prior to risk adjustments, to exceed Actos.
- **News flow highlights management productivity** — Takeda appears to be pulling out all the stops to turn earnings around: it announced headcount reductions in Europe and the US in January, it recently announced the acquisition of URL, and in Japan it has begun online promotion using the M3 medical portal. We think the market has not yet appreciated management's determination.

Buy	1
Price (20 Apr 12)	¥3,435
Target price	¥4,400
from ¥4,300	
Expected share price return	28.1%
Expected dividend yield	5.2%
Expected total return	33.3%
Market Cap	¥2,711,639M
	US\$33,249M

Price Performance (RIC: 4502.T, BB: 4502.JP)



Consol.	Sales		OP		RP		NP		EPS		PE
	¥M	YOY (%)	¥M	YOY (%)	OPM (%)	¥M	YOY (%)	¥M	YOY (%)	¥	X
3/10A	1,465,965	-4.7	420,212	37.1	28.7	415,829	27.1	297,744	27.0	377	9.1
3/11A	1,419,385	-3.2	367,084	-12.6	25.9	371,572	-10.6	247,868	-16.8	314	10.9
3/12CE	1,510,000	6.4	270,000	-26.4	17.9	270,000	-27.3	130,000	-47.6	165	20.9
3/12E	1,512,000	6.5	280,000	-23.7	18.5	280,000	-24.6	135,000	-45.5	171	20.1
3/13E	1,490,000	-1.5	214,000	-23.6	14.4	209,000	-25.4	134,500	-0.4	170	20.2
3/13RE	1,540,000	1.9	211,000	-24.6	13.7	206,000	-26.4	185,200	37.2	235	14.6
3/14E	1,504,000	0.9	275,000	28.5	18.3	270,000	29.2	171,700	27.7	218	15.8
3/14RE	1,561,000	1.4	293,000	38.9	18.8	288,000	39.8	182,700	-1.3	231	14.8
3/15E	1,525,000	1.4	279,000	1.5	18.3	274,000	1.5	174,100	1.4	221	15.6
3/15RE	1,595,000	2.2	306,000	4.4	19.2	301,000	4.5	190,600	4.3	241	14.2
3/16E	1,645,000	7.9	358,000	28.3	21.8	353,000	28.8	222,300	27.7	282	12.2
3/16RE	1,716,000	7.6	376,000	22.9	21.9	371,000	23.3	233,300	22.4	296	11.6

A: Actuals, E: CIRA Ests, CE: Company Ests, RE: CIRA Revised Ests, CRE: Company Revised Ests, NA: Not Available, NM: Not Meaningful

Hidemaru Yamaguchi
+81-3-6270-4742
hidemaru.yamaguchi@citi.com

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Citi Investment Research & Analysis is a division of Citigroup Global Markets Inc. (the "Firm"), which does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Takeda Pharmaceutical (4502)

23 April 2012

4502.T: Fiscal year end 31-Mar						Price: ¥3,435; TP: ¥4,400; Market Cap: ¥2,711,639m; Recomm: Buy					
Profit & Loss (¥m)	2010	2011	2012E	2013E	2014E	Valuation ratios	2010	2011	2012E	2013E	2014E
Sales revenue	1,465,965	1,419,385	1,512,000	1,540,000	1,561,000	PE (x)	9.1	10.9	20.1	14.6	14.8
Cost of sales	-285,064	-317,582	-434,000	-401,000	-419,000	PB (x)	1.3	1.3	1.1	1.1	1.1
Gross profit	1,180,901	1,101,803	1,078,000	1,139,000	1,142,000	EV/EBITDA (x)	3.3	3.6	3.6	3.5	3.0
Gross Margin (%)	80.6	77.6	71.3	74.0	73.2	FCF yield (%)	9.1	4.3	9.1	10.9	10.2
EBITDA	535,037	473,806	426,000	365,000	417,000	Dividend yield (%)	5.2	5.2	5.2	5.2	5.2
EBITDA Margin (%)	36.5	33.4	28.2	23.7	26.7	Payout ratio (%)	48	57	105	77	78
Depreciation	-99,755	-92,592	-125,000	-124,000	-124,000	ROE (%)	14.4	11.8	5.9	7.5	7.3
Amortisation	-15,070	-14,130	-21,000	-30,000	0	Cashflow (¥m)	2010	2011	2012E	2013E	2014E
EBIT	420,212	367,084	280,000	211,000	293,000	EBITDA	535,037	473,806	426,000	365,000	417,000
EBIT Margin (%)	28.7	25.9	18.5	13.7	18.8	Working capital	14,148	-9,160	2,200	-17,100	-1,700
Net interest	547	396	-4,604	-9,604	-9,604	Other	-189,221	-198,618	-142,700	-23,500	-108,000
Non-op/Except	-4,930	4,092	4,604	4,604	4,604	Operating cashflow	359,964	266,028	285,500	324,400	307,300
Recurring profit	415,829	371,572	280,000	206,000	288,000	Capex	-114,500	-148,900	-40,000	-30,000	-30,000
Tax	-115,668	-121,326	-118,300	-30,100	-103,000	Net acq/disposals	753	690	0	0	0
Extraord./Min.Int./Pref.div.	-2,417	-2,378	-26,700	9,300	-2,300	Other	-3,774	48,955	0	0	0
Reported net profit	297,744	247,868	135,000	185,200	182,700	Investing cashflow	-117,521	-99,255	-40,000	-30,000	-30,000
Net Margin (%)	20.3	17.5	8.9	12.0	11.7	Dividends paid	-142,130	-142,102	-142,100	-142,100	-142,100
Core NPAT	297,744	247,868	135,000	185,200	182,700	Financing cashflow	-148,046	-146,544	-142,100	-142,100	-142,100
Per share data	2010	2011	2012E	2013E	2014E	Net change in cash	73,193	20,229	103,400	152,300	135,200
Reported EPS (¥)	377	314	171	235	231	Free cashflow to s/holders	245,464	117,128	245,500	294,400	277,300
Core EPS (¥)	377	314	171	235	231						
EPS* (¥)	377	314	171	235	231						
DPS (¥)	180	180	180	180	180						
CFPS (¥)	456	337	362	411	389						
FCFPS (¥)	311	148	311	373	351						
BVPS (¥)	2,687	2,650	3,105	3,160	3,211						
Wtd avg ord shares (m)	789	789	789	789	789						
Wtd avg diluted shares (m)	789	789	789	789	789						
Growth rates	2010	2011	2012E	2013E	2014E						
Sales revenue (%)	-4.7	-3.2	6.5	1.9	1.4						
EBIT (%)	37.1	-12.6	-23.7	-24.6	38.9						
Core NPAT (%)	27.0	-16.8	-45.5	37.2	-1.3						
Core EPS (%)	27.0	-16.8	-45.5	37.2	-1.3						
Balance Sheet (¥m)	2010	2011	2012E	2013E	2014E						
Cash & cash equiv.	883,216	874,218	1,318,600	1,325,800	1,427,100						
Accounts receivables	279,699	293,104	312,300	318,100	322,500						
Inventory	137,696	137,127	146,100	148,800	150,800						
Net fixed & other tangibles	412,659	517,703	513,800	500,800	462,800						
Goodwill & intangibles	639,895	517,427	517,400	517,400	517,400						
Financial & other assets	470,108	446,822	446,800	446,800	446,800						
Total assets	2,823,273	2,786,401	3,255,000	3,257,700	3,327,400						
Accounts payable	72,818	83,065	113,500	104,900	109,600						
Short-term debt	3,285	1,345	0	0	0						
Long-term debt	0	0	0	0	0						
Provisions & other liab	582,425	565,336	645,400	613,600	638,000						
Total liabilities	658,528	649,746	758,900	718,500	747,600						
Shareholders' equity	2,121,338	2,091,923	2,451,400	2,494,500	2,535,100						
Minority interests	43,407	44,732	44,700	44,700	44,700						
Total equity	2,164,745	2,136,655	2,496,100	2,539,200	2,579,800						
Net debt	-879,931	-872,873	-1,318,600	-1,325,800	-1,427,100						
Net debt to equity (%)	-40.6	-40.9	-52.8	-52.2	-55.3						

Note: Consolidated data. * EPS: NP/Est Shares OS.

For further data queries on Citi's full coverage universe please contact CIRA Data Services Japan at CIRADatServicesJapan@citi.com or +81-3-6270-4720

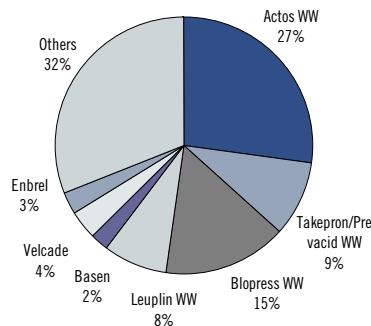
Investment Dashboard

Reasons to Buy

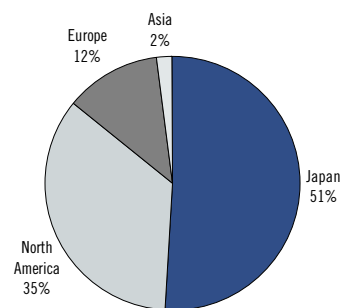
- We expect a profit decline in FY3/13 as Actos generics are launched in the US but think that will mark the bottom
- Sales of the DPP4 inhibitor Nesina are growing rapidly in Japan, and we forecast ¥16.5bn for FY3/12 and ¥40bn+ for FY3/13. In the US, Nesina has an FDA action date of April 25 and we expect approval to be granted
- Takeda has strengthened its marketing muscle in emerging markets through the Nycomed acquisition, and we think this will mean higher peak annual sales of new drugs moving forward

Sales breakdown (FY3/11)

By product



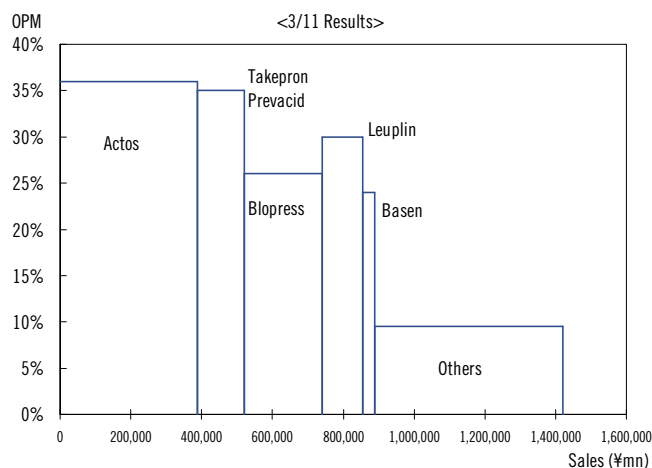
By region



Source: Company data, Citi Investment Research and Analysis.

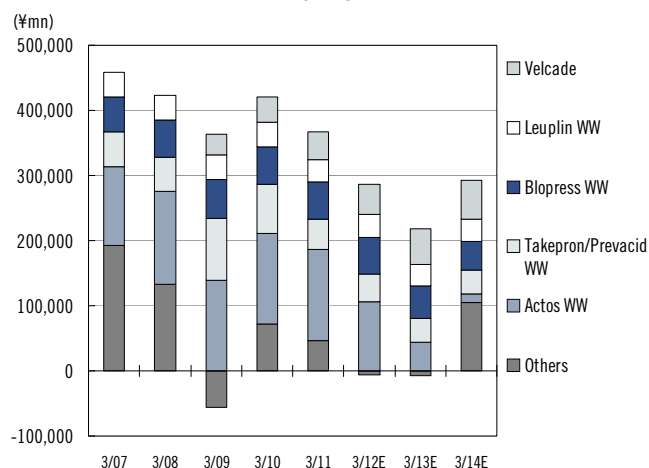
Business portfolio

<3/11 Results>



Source: Company data, Citi Investment Research and Analysis.

OP by segment

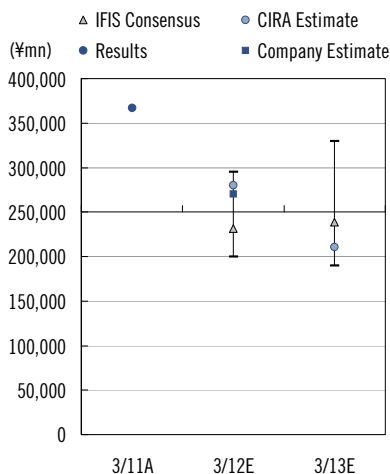


Source: Company data, Citi Investment Research and Analysis.

Alternate scenario: A more bearish case

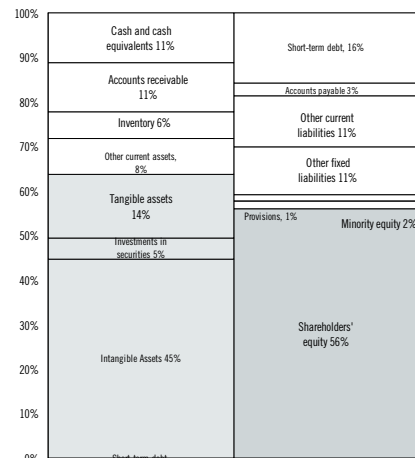
- Earnings look set to be weak in the short term, so investors are likely to view Takeda as a high-dividend stock for now. A 5% dividend yield would suggest a theoretical share price of ¥3,600 and a Neutral rating

OP forecast comparison



Source: Company data, IFIS (April 19), Citi Investment Research and Analysis.

Balance sheet (end-FY3/12 Q3)



Source: Company data.

Share price drivers	Company description
<ul style="list-style-type: none"> ■ SYR-322 approval in the US (FDA action date is April 25) and rapid initial uptake ■ Disclosure of Nycomed business details ■ Dividend policies ■ Development breakthroughs for major new drugs (TAK-875, TAK-700, MLN9708) 	<p>Takeda, set up in 1781 as a pharmaceutical wholesaler, is Japan's largest pharmaceutical firm. Under the management of Kunio Takeda, who took the helm in June 1993, the company concentrated on pharmaceuticals and got on track with a push overseas (especially in the US) and the launch of a succession of blockbusters, so earnings grew quickly. However, R&D efforts continued to stagnate for some time and Takeda has come to suffer from a lack of products. Yasuchika Hasegawa took the reins in 2003 and has been managing the company with a goal of future growth in a tough environment, with US market growth slowing, significant new drug development risks, and stagnation in in-house drug development. Although Takeda has been aiming to complete its US sales network and move into cancer treatments with the acquisitions of a US JV and the US major Millennium Pharmaceuticals, it has not managed to overcome patent expiries for blockbusters that began in 2009. Recently, the chances have increased that the launch of Actos generics in the US will be delayed until August 2012, so Takeda will be responding to its patent expiry issue through FY3/13. In May 2011, the company decided to acquire the mid-sized European firm Nycomed to expand its marketing network in developing markets.</p>

Valuation

Code	Company	Rating	Price	Mkt Cap	FY1E=	EPS	PER (x)	PBR (x)	OPM	EV/EBITDA (x)	RoE	
				(\$ bn)		FY1E	FY2E	FY1E	FY2E	FY1E	FY2E	FY1E
Major pharmaceuticals												
4151.T	Kyowa Hakko Kirin	1	JPY	846.00	5.8	12/12	37.8	51.9	22.4	16.3	0.8	15.3%
4502.T	Takeda	1	JPY	3,435.00	33.2	3/12	171.0	234.6	20.1	14.6	1.1	18.5%
4503.T	Astellas	1	JPY	3,240.00	18.4	3/12	184.1	213.9	17.6	15.1	1.4	14.2%
4507.T	Shionogi	2	JPY	1,056.00	4.3	3/12	81.2	88.4	13.0	11.9	0.9	16.6%
4508.T	Mitsubishi Tanabe	1	JPY	1,127.00	7.8	3/12	65.9	79.1	17.1	14.2	0.9	16.8%
4519.T	Chugai	1	JPY	1,423.00	9.5	12/12	84.2	91.0	16.9	15.6	1.6	18.4%
4523.T	Eisai	2	JPY	3,115.00	10.9	3/12	208.4	176.2	14.9	17.7	2.1	15.1%
4568.T	Daiichi Sankyo	3	JPY	1,363.00	11.8	3/12	21.9	93.2	nm	14.6	1.1	11.5%
4578.T	Otsuka Holdings	1	JPY	2,391.00	16.4	3/12	182.5	197.2	13.1	12.1	1.1	13.5%
AZN.L	AstraZeneca	2	USD	28.67	58.8	12/12	6.3	6.2	7.3	7.5	2.6	31.4%
GSK.L	GlaxoSmithKline	1	GBP	14.70	119.5	12/12	1.2	1.3	12.1	11.0	nm	28.8%
NOVN.VX	Novartis	2	USD	51.20	154.6	12/12	5.3	5.8	10.6	9.7	2.0	18.1%
ROG.VX	Roche	2	CHF	168.70	161.5	12/12	13.3	14.4	12.6	11.7	nm	33.9%
SASY.PA	Sanofi	1	EUR	56.67	100.5	12/12	5.9	6.4	9.7	8.9	1.3	21.7%
BMV.N	Bristol Myers	1	USD	34.23	57.8	12/11	2.3	2.0	15.0	17.4	3.7	32.9%
LLY.N	Eli Lilly	2	USD	39.91	46.3	12/11	4.4	3.2	9.0	12.4	3.3	26.0%
JNJ.N	Johnson & Johnson	1	USD	63.71	175.2	12/12	5.2	5.5	12.3	11.6	2.7	26.6%
MRK.N	Merck	2	USD	38.73	117.8	12/11	3.8	3.8	10.3	10.1	2.2	32.4%
PFE.N	Pfizer	2	USD	22.56	170.0	12/11	2.3	2.3	9.7	9.8	2.2	39.4%
Mid-tier pharmaceuticals												
4506.T	Dainippon Sumitomo	2	JPY	786.00	3.8	3/12	25.9	19.4	30.3	40.6	0.9	6.4%
4516.T	Nippon Shinyaku	1	JPY	998.00	0.8	3/12	56.3	68.1	17.7	14.6	0.8	9.2%
4527.OS	Rohto	1	JPY	988.00	1.4	3/12	70.4	83.3	14.0	11.9	1.4	11.5%
4528.OS	Ono	2	JPY	4,485.00	5.8	3/12	194.3	209.4	23.1	21.4	1.1	26.1%
4530.T	Hisamitsu	3	JPY	3,560.00	3.7	2/13	209.9	220.6	17.0	16.1	1.9	16.2%
4536.OS	Santen	1	JPY	3,350.00	3.6	3/12	236.8	204.6	14.1	16.4	1.7	26.1%
4547.T	Kissei	2	JPY	1,483.00	0.9	3/12	85.5	71.9	17.3	20.6	0.6	9.5%
4569.T	Kyorin Holdings	1	JPY	1,515.00	1.4	3/12	137.8	129.8	11.0	11.7	1.0	14.4%
4581.T	TAISHO PHA HDG	2	JPY	6,580.00	6.6	3/12	297.1	343.4	22.1	19.2	1.0	14.0%
WPL.N	Watson Pharm	2	USD	69.36	8.8	12/12	5.7	6.0	12.2	11.5	1.3	22.5%
ENDP.O	Endo Pharma	1	USD	35.42	4.1	12/12	5.3	6.0	6.7	5.9	1.6	35.4%
UCB.BR	UCB SA	2	EUR	34.90	8.5	12/11	2.0	1.9	17.6	18.2	1.3	14.3%
ATLN.VX	Actelion	2	CHF	32.86	4.7	12/12	2.2	3.1	15.0	10.7	2.7	18.5%
AGN.N	Allergan	1	USD	95.58	29.1	12/12	4.2	4.9	22.6	19.6	4.6	31.6%
Med-tech												
3593.T	Hogy	2	JPY	3,545.00	0.7	3/12	290.5	310.9	12.2	11.4	0.9	24.0%
4543.T	Terumo	2	JPY	3,575.00	8.3	3/12	141.2	190.4	25.3	18.8	1.8	16.3%
7447.T	Nagaileben	1	JPY	1,229.00	0.5	8/12	81.9	88.0	15.0	14.0	1.4	30.8%
BAX.N	Baxter Intl	2	USD	54.17	30.1	12/12	4.5	4.7	12.0	11.5	3.9	23.1%
BSX.N	Boston Scient	2	USD	5.94	8.5	12/12	0.4	0.4	13.4	14.2	0.7	21.3%
BCR.N	C.R. Bard Inc	2	USD	98.07	8.3	12/12	6.7	7.0	14.7	14.0	3.4	27.0%
STJ.N	St Jude Medical	3	USD	38.02	11.9	12/12	3.4	3.4	11.1	11.3	2.4	26.0%
MDT.N	Medtronic Inc	1	USD	37.61	39.1	4/12	3.5	3.7	10.9	10.2	2.2	32.0%
MR.N	Mindray	1	USD	33.02	3.8	12/12	1.8	2.0	18.4	16.2	2.9	19.3%
Drug wholesalers												
7459.T	Medipal	2	JPY	1,000.00	2.9	3/12	47.2	62.9	21.2	15.9	0.8	0.8%
9987.T	Suzuken	2	JPY	2,428.00	2.7	3/12	135.0	146.4	18.0	16.6	0.7	0.4%
CAH.N	Cardinal Health	1	USD	41.55	14.4	6/12	3.3	3.8	12.6	11.1	2.3	1.8%
ABC.N	AmerisourceBergn	2	USD	37.75	9.7	9/12	2.8	3.2	13.6	11.9	2.8	1.6%
MCK.N	McKesson	1	USD	91.00	22.4	3/12	6.3	7.2	14.3	12.6	2.9	1.8%
1099.HK	Sinopharm	1	CNY	21.30	6.6	12/12	0.8	0.9	22.2	18.9	2.1	3.6%

Note: Share prices as of April 20 close.

Source: Citi Investment Research and Analysis.

Market view on Takeda to turn positive

Here we detail the growth cycle and valuation changes illustrated in Figure 1 and Takeda's new drug offerings that we believe offer medium-term promise.

Growth cycle and valuation changes

2010 problems impacted the share price

Major unease that persisted for some time was generated by the so-called 2010 problem—when Japan's big three pharmaceutical firms (Astellas, Eisai, and Takeda) faced the risk of an earnings slump as mainstay drugs went off-patent overseas. We feel Takeda's patent expiry problems kicked off when the market started to look toward the 2009 patent expiry of the ulcer drug Prevacid. Investor concerns emerged several years beforehand and valuations gradually edged lower.

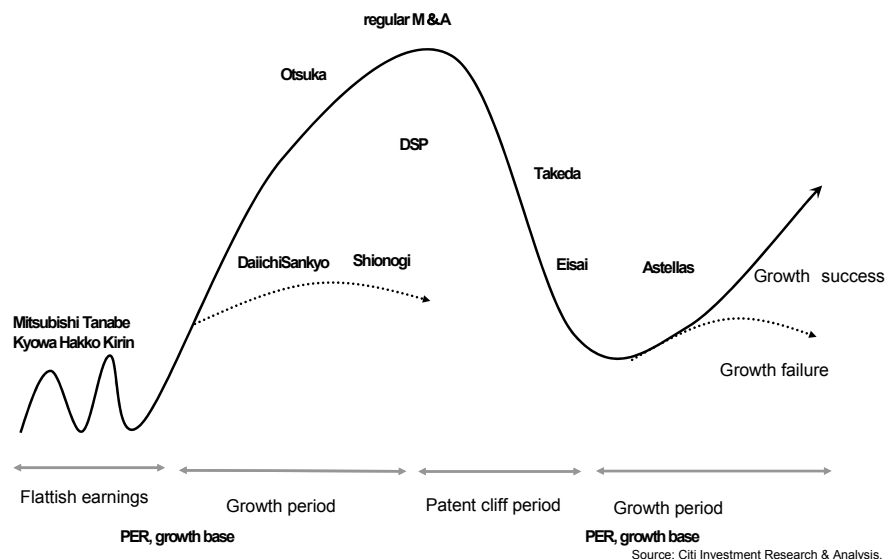
Growth cycle analysis clarifies stock positioning

Assuming a typical growth pattern like that illustrated in Figure 1, Takeda was at the pre-growth stage (the extreme left) when global development of Prevacid began in the late 1990s. Subsequently, in addition to Prevacid Takeda added Blopess (launched in 1997) and Actos (launched in 1999), resulting in rarely-seen growth. Earnings peaked in FY3/07 ahead of the expiry of the Prevacid patent. Even after the Millennium and Nycomed acquisitions, earnings have failed to recover and the shares lost ground. Takeda shares have been essentially flat since 2009 and in terms of Figure 1 we believe Takeda is in the post-patent earnings downtrend. However, we expect earnings to hit bottom in FY3/13 and embark on a recovery from FY3/14. For the first two years of the recovery phase, FY3/14 and FY3/15, we expect low top-line growth. We then anticipate a succession of new drug launches from 2015 and so expect a full-fledged recovery in sales from FY3/16.

Shifting valuation focus from high dividend to PER requires . . .

Takeda continued to hike DPS through to FY3/09, when it reached ¥180, and has maintained that level thereafter. Assuming a dividend yield of 5% implies a theoretical share price of ¥3,600. That is, the shares should be around ¥3,600 if investors are confident that the dividend level will be maintained. As the shares are somewhat below this level, it would seem the market has priced in some risk of a dividend cut. However, since Takeda's growth spurt started in the 1990s, it has never cut its dividend. Also, we note that the refund of taxes paid in the past announced the other day (a ¥52.7bn positive for NP) will occur in FY3/13, giving Takeda room to pay the dividend. As Takeda's dividend yield is high even on a global basis, we think the shares are on the radar of yield-driven investors. For investors to anticipate growth and shift their focus to PER, we believe EPS would need to be at least ¥240, or ¥3,600 divided by the customary industry PER of 15x. From FY3/15, we expect EPS to break above ¥240 and then continue rising.

Figure 1. Pharma companies: Where they currently are on the earnings cycle



Source: Citi Investment Research and Analysis.

Healthy pipeline

Declining hit rate was a concern

Takeda had launched all of its major global hits by 2000, and it appears that development thereafter did not go well. The cholesterol-lowering agent TAK-475 is a case in point. Development was terminated after side-effects emerged during Phase 3 trials in 2008. We think Takeda's strengths in lifestyle disease treatments also proved something of an obstacle to progress. That is, when most European and US pharmaceutical firms shifted the focus of their development to unmet medical needs like cancer treatments and away from lifestyle diseases, it appears Takeda was slow to follow suit. Moreover, Takeda failed to respond appropriately when trials indicated that some diabetes treatments, starting with Avandia, had adverse cardiovascular impacts. When guidelines were changed, Takeda maintained that SYR-322 did not need to undergo additional trials because initial trials had been completed. It seems the initial plan was to obtain approval in October 2008 for SYR-322 and secure enough time to fill the gap left by Actos. However, the FDA eventually ordered that SYR-322 undergo additional trials to check its effect on circulatory organs. Development was consequently delayed by three-and-a-half years and the April 25, 2012, FDA action date is only now approaching. We believe this experience along with the arrival of experienced personnel with the 2008 company's Millennium acquisition have led to an improvement in the company's global development capabilities.

TAK-700 comes from Takeda's area of expertise

TAK-700 is a prostate cancer treatment developed in-house that is currently in Phase 3 trials. If progress is smooth, the company expects to announce Phase 3 results in 2013. Takeda has hardly any cancer drugs, the sole exception being the prostate cancer treatment Leuplin. A team led by the late Masahiko Fujino developed the compound, and the drug is still generating global sales of ¥110bn. Current treatment regimes involve initial treatment with hormone agents like Leuplin until resistance is built up, at which point chemotherapy treatment begins. TAK-700 is used either as a follow-up or as a precursor to chemotherapy and is aimed at extending patient life.

TAK-700 works by inhibiting the synthesis of an enzyme key to the production of male hormones. The drug comes on the heels of Johnson & Johnson's Zytiga (already on the market) and MDV-3100, a collaboration between Astellas and Medivation, that is currently in Phase 3 trials. We think expectations are high for MDV-3100 due to the release of positive trial data. TAK-700 works much in the same way as Zytiga. However, as TAK-700 blocks enzymes more accurately, patients may be able to avoid combination therapy with steroids, a disadvantage of treatment with Zytiga. If this proves to be the case, TAK-700 should be able to set itself apart from Zytiga. The basic mechanism of action for MDV-3100 is different from the other two. It acts on male hormone receptors to block information transmission. Accordingly, we think it could be combined with either Zytiga or TAK-700 to treat prostate cancer. We understand that globally there are 100,000 prostate cancer patients that have undergone chemotherapy treatment and 200,000 patients that have yet to undergo treatment. At a treatment cost of ¥5mn, we estimate a latent market of ¥500bn for the first category and ¥1trn for the second. Currently, we expect TAK-700 to be released in 2015 and to generate peak annual sales of ¥100bn.

TAK-875 could surpass Actos

TAK-875 is a GPR40 agonist, and the once-daily dosage and glucose-reducing effects are similar to those of the sulfonylurea (SU) treatment glimepiride (Amaryl). Some clinicians still feel that SU drugs are the most efficacious, but they can lead to hypoglycemia. Takeda's Phase 2 trials demonstrated a significantly lower incidence of hypoglycemia with TAK-875 (2.3%, on par with the placebo at 3.3%) than glimepiride (16.1%). While the development of new treatments for diabetes continues, the balance between benefits and side effects remains unsatisfactory and we see ample room for new entrants. The biggest problem with SU drugs, which have shown real effectiveness from a therapeutic standpoint, is hypoglycemia, so resolving this issue could result in a blockbuster.

We assume a launch for TAK-875 in 2016, with peak sales reaching ¥40bn, but if Phase 3 trials are successful the drug could even be a bigger hit than Actos (peak sales of ¥400bn). There looks to be significant room for expectations regarding TAK-875 to rise. In Phase 3 trials, we anticipate direct comparisons with DPP-4 treatments and tests for cardiac impact.

TAK-875 limits insulin secretion to lower glucose levels, and in this it is similar to traditional glucose-reducing SU drugs. Because SU drugs limit insulin secretion regardless of the patient's glucose levels, they can lead to hypoglycemia. However, by activating GPR40 receptors that exist in insulin-secreting islet cells, TAK-875 can stimulate insulin in a glucose concentration-dependent manner. Basically, it may be the first "smart" SU drug capable of stimulating insulin as needed. We understand there have been no indications of carcinogenic or other problematic side effects.

MLN-9708 the clearest benefit of the Millennium acquisition

We think MLN-9708 (oral/injectable), developed by Millennium, has the potential to surpass the existing mainstay injectable treatment Velcade. We expect the drug to begin Phase 3 trials in June, followed by an NDA in 2014 and launch in 2015. The proteasome inhibiting mechanism is similar to that of Velcade, and we understand the drug could have applications beyond Velcade's plasma cell cancer indication, including solid carcinomas. MLN-9708 is currently being developed for a multiple myeloma indication (like Velcade), and details regarding development for solid carcinoma treatment are not clear. Global sales of Revlimid, an oral treatment for multiple myeloma, myelodysplastic syndrome, and lymphomas, are around \$3bn annually, so we think MLN-9708 could be a blockbuster. We currently expect a 2015 launch and peak annual sales of ¥100bn.

Figure 2. Takeda Pharmaceutical: Products under development (1)

Code Name Trade Name (generic name)	Therapeutic Class	Licensed from	Status	Launch Date Est'd Sales (¥bn)
EDARBI TAK-491 (azilsartan)	Antihypertensive (Angiotensin 2 receptor antagonist) combo with chlorthalidone	own	Approved 2/2011 Approved 12/2011 EU Approved 12/2011 USA Phase-3 EU NDA 8/11 Taiwan NDA9/11 Thailand	L:2011 E:50.0
Feraheme (ferumoxytol)	for treatment of iron deficiency anemia (IDA) (iv)	AMAG	NDA EU 6/10 Approved 12/2011 Canada	L:2012 E:10.0
CONTRAVE (naltrexone/bupropion)	Anti-obesity	Orexigen	NDA 3/10 USA	may not be approved
TAK-536 (azilsartan)	Antihypertensive combo with amlodipine (Angiotensin 2 receptor antagonist)	own	Approved 1/12 Phase-3	L:2012 E:70.0
SGN-35 (brentuximab) ADCETRIS	for treatment of relapsed and refractory Hodgkin lymphoma (HL) for treatment of refractory systemic anaplastic large cell lymphoma Hodgkin lymphoma (HL) (1st line) systemic anaplastic large cell lymphoma (1st line)	Seattle Genetics	NDA 5/11 EU Phase-1/2 NDA 5/11 EU Phase-1/2 Phase-1 EU Phase-1 EU	L:2013 E:10.0
OMONTYS (Hematide) AF37702 (peginesatide)	for treatment of anemia ESA(erythropoiesis-stimulating agent)	Affymax	Approved 3/2012 USA NDA 2/2012 EU	L:2012 E:80.0
TAK-085 OMACOR	for treatment of hypertriglyceridemia (EPA, DHA)	Pronova Biocare	NDA 9/11	L:2013 E:30.0
AMG706 motesanib	Anticancer (VEGFR-1,2,3 inhibitor) Breast cancer	Amgen	Phase-3 Phase-3 EU, USA Phase-1/2 USA	may be dropped
ATL-962	Antiobesity (Lipase inhibitor)	Norgine BV (Alizyme)	Phase-3	L:2013 E:15.0
AMG386	Anticancer (Peptibody)	Amgen	Phase-1	may be dropped
AMG479	Anticancer (Mab for insulin-like growth factor 1 receptor)	Amgen	Phase-3	may be dropped
TAK-816	HIV Vaccine	Novartis	Phase-3	L:2015 E:50.0
MLN0002 (vedolizumab)	for treatment of ulcerative colitis for treatment of Crohn's disease	Millennium	Phase-1 Phase-3: USA & EU Phase-3: USA & EU	L:2013 E:10.0
Lu AA21004	for treatment of mood and anxiety disorders	Lundbeck	Phase-3 Phase-3 EU • USA	L:2014 E:50.0
LATUDA (lurasidone)	Major tranquilizer (D2/S2 receptor antagonist) Bipolar	Dainippon Sumitomo EU mkg right	Phase-3 EU Phase-3 EU	L:2014 E:30.0 P:2019/7/2
TAK-700	Anticancer (prostate, hormone synthesis inhibitor)	own	Phase-3 Phase-3 EU • USA	L:2015 E:100.0
TAK-875	Antidiabetic (Glucose dependent insulin secretion, GPR40 agonist)	own	Phase-3 Phase-3 USA, EU	L:2016 E:40.0
SYR-472	Antidiabetic (Dipeptidyl peptidase IV inhibitor) (weekly formulation)	Syrrx/Takeda SD	Phase-3 Phase-2 USA Phase-2 EU	back up for SYR-322
TAK-438	Antiulcer (Acid blocker)	own	Phase-3	to replace Takepron
TAK-385	Uterine fibroid endometriosis Prostate cancer (LH-RH antagonist)	own	Phase-2 Phase-1	may be dropped

Note: E: Citi Investment Research and Analysis estimates.

Source: Company reports, trade journals, Citi Investment Research and Analysis.

Figure 3. Takeda Pharmaceutical: Products under development (2)

Code Name Trade Name (generic name)	Therapeutic Class	Licensed from	Status	Launch Date Est'd Sales (\$bn)
TAK-361S	Vaccine (diphtheria, Pertussis, Tetanus, Polio)	own	Phase-2	L:2018 E:5.0
MLN0518 (tandutinib)	Anticancer (malignant glioma, acute myelocytic leukemia)	Millennium	Phase-2: USA	L:2013 E:5.0
TAK-441	Anticancer (Hedgehog signaling pathway inhibitor)	own	Phase-1	may be dropped
MLN8237	Anticancer (Aurora kinase inhibitor)	Millennium	Phase-1 Phase-2 USA & EU	may be dropped
TAK-428	Diabetic neuropathy (Neurotrophic factor production accelerator)	own	Phase-2 USA Phase-2 EU	may be dropped
TAK-448	Anticancer (prostate, GnRH modulator)	own	Phase-1	may be dropped
Lu AA24530	for treatment of mood and anxiety disorders (Monoamine modulator)	Lundbeck	Phase-1 pre-Phase-3 USA	may be dropped
MLN9708	Anti-cancer (MM) Advanced cancer (Proteosome inhibitor)	Millennium	Phase-1/2 USA Phase-1 USA	L:2015 E:100.0
TAK-591	Antihypertensive (Angiotensin 2 receptor antagonist)	own	Phase-1	may be dropped
TAK-272	Antihypertensive	own	Phase-1	may be dropped
MLN4924	Anticancer (Nedd8 activating enzyme inhibitor)	Millennium	Phase-1 USA	may be dropped
TAK-701	Anti-cancer (Anti-HGF antibody)	Galaxy Biotech	Phase-1 USA	may be dropped
TAK-329	Antidiabetic (Glucokinase activator)	own	Phase-1	may be dropped
TAK-733	Anti-cancer (MEK inhibitor)	own	Phase-1 USA	may be dropped
AMG 403	for treatment of pain (human anti-NGF monoclonal antibody)	Amgen	Phase-2	may be dropped
TAK-960	Anti-cancer (PLK1 inhibitor)	own	Phase-1	may be dropped
TAK-259	Overactive bladder	own	Phase-1	may be dropped
MLN-2480	Anti-cancer	Millennium	Phase-1	may be dropped
TRM-1	Anti-cancer (Human MAB fro TRAIL-R1)	Human genome Sciences	pre-clinical	may be dropped
XEN401	pain killer	Xenon	pre-clinical	may be dropped
MLN3126	for treatment of Crohn's disease	Millennium	pre-Phase-1 USA	may be dropped

Note: E: Citi Investment Research and Analysis estimates.

Source: Company reports, trade journals, Citi Investment Research and Analysis.

Figure 4. Takeda Pharmaceutical: Sales by product and business (¥bn)

	3/11A		3/12E	3/13E	3/14E	3/15E	3/16E
Current products		CE					
ACTOS	387.9		295.1	121.2	37.3	34.0	31.6
Domestic	47.9	32.5	32.5	26.0	23.4	21.0	20.0
USA	306.2	243.7	240.6	84.2	8.4	10.2	10.2
ACTOSPLUSMET	46.4		46.4	23.2	2.3	0.7	0.7
DUETACT	2.9		3.1	2.9	0.3	0.3	0.3
OTHERS	256.8		191.1	58.1	5.8	9.2	9.3
Europe, Asia	33.8		22.0	11.0	5.5	2.7	1.4
BLOPRESS	218.0	0.0	217.0	189.4	171.6	138.2	114.3
Domestic	138.0	143.0	143.0	143.0	145.8	124.0	105.4
Overseas	29.0		26.8	13.4	2.7	2.7	0.8
Export	51.0		47.2	33.0	23.1	11.6	8.1
TAKEPRON	133.6	0.0	120.6	105.7	102.1	92.4	89.3
Domestic	70.9	36.0	76.0	79.8	78.2	70.4	69.0
Overseas	19.9		20.6	18.7	17.0	15.5	14.1
Export	42.8		24.0	7.2	6.9	6.5	6.2
LEUPLIN	116.4	118.0	118.0	113.3	112.0	74.7	74.3
Domestic	65.9	66.5	66.5	63.2	63.2	60.0	60.0
Overseas	35.8		36.0	35.3	34.6	10.4	10.2
Export	14.7		15.5	14.9	14.3	4.3	4.1
VELCADE US	50.8	56.1	55.7	64.0	72.0	79.8	86.6
VELCADE ROYALTIES	17.0		18.4	22.0	24.2	26.7	29.3
ENBREL	38.4		41.5	39.4	39.4	37.4	37.4
BASEN	32.2	25.5	25.5	22.9	20.6	17.5	15.8
AMITIZA USA	18.6	18.3	18.0	18.0	18.0	18.0	18.0
KAPIDEX (DEXILANT)USA	18.1	24.5	24.6	29.5	31.0	31.3	32.9
BENET	17.6	16.5	16.5	16.5	16.5	16.5	16.5
GLOBENIN-I	10.0		10.0	10.0	10.0	10.0	10.0
VECTIBIX	9.4	13.0	17.0	25.5	38.3	45.9	50.5
RHEUMATREX	9.2		10.1	0.0	0.0	0.0	0.0
ULORIC USA	9.1	13.5	12.5	18.7	30.0	39.0	40.9
SELTOUCH	8.7	8.5	8.5	8.5	8.5	8.5	8.5
FIRSTCIN	5.1		5.0	4.9	4.8	4.7	4.6
DASEN	4.7		0.0	0.0	0.0	0.0	0.0
PANSPORIN	3.9		3.7	3.3	3.2	3.0	2.9
PANSPORIN-T	0.2		0.1	0.1	0.1	0.0	0.0
Other MLNM sales	3.7		3.7	3.7	3.7	3.7	3.7
GLUFAST	3.6		3.0	3.0	3.0	2.8	2.8
CALSLOT	2.8		2.5	2.3	2.0	1.8	1.7
ISOVORIN	2.5		2.4	0.0	0.0	0.0	0.0
LEUCOVORIN	1.8		1.6	0.0	0.0	0.0	0.0
NESINA	1.6	16.5	16.5	46.2	73.9	92.4	101.6
ROZEREM	1.0	2.5	2.5	5.0	6.5	7.2	7.9
ROZEREM USA	4.5	3.9	4.2	4.2	4.2	4.2	4.2
REMINYL	0.5	2.5	2.5	4.5	6.8	8.8	10.5
Ethicals	137.7		137.6	112.8	107.2	101.8	96.7
Subtotal	1,268.7		1,194.4	994.9	947.0	900.5	892.6

Note: E: Our estimates.

Source: Company data, Citi Investment Research and Analysis.

Figure 5. Takeda Pharmaceutical: Sales by product and business (continued)

	3/11A	3/12E	3/13E	3/14E	3/15E	3/16E
New products	<i>CE</i>					
EDARBI USA		0.5	3.0	9.0	11.7	15.2
SYR-322 US			10.0	30.0	45.0	58.5
TAK-536			2.0	4.0	16.0	40.0
feraheme EU			2.0	4.0	6.0	7.8
SGN-35 EU			2.0	4.0	4.8	5.3
MLN0518 USA				5.0	7.5	11.3
MLN0002 USA				5.0	7.0	10.5
ATL-962				5.0	5.5	5.5
TAK-085				2.0	8.0	20.0
tofacitinib				2.0	5.0	7.5
HEMATIDE					0.0	0.0
ONONTYS USA			10.0	15.0	30.0	45.0
LATUDA EU					4.0	6.0
TAK-700						5.0
MLN9708						5.0
Lu AA21004						4.0
TAK-816						2.0
Sub-Total	0.0	0.5	77.0	137.8	210.6	307.8
Healthcare	60.3	61.5	62.7	64.0	65.3	66.6
Royalty	41.4	37.3	26.1	26.1	26.1	26.1
Others	49.0	48.8	48.6	48.4	48.2	48.0
NYCOMED	0.0	170.0	330.8	337.4	344.1	375.1
Consolidated	1,419.4	1,512.0	1,540.0	1,561.0	1,595.0	1,716.0
(% Change)	-3.2%	6.5%	1.9%	1.4%	2.2%	7.6%

Note: E: Our estimates.

Source: Company data, Citi Investment Research and Analysis.

Figure 6. Takeda Pharmaceutical: Consolidated earnings model (¥bn)

	3/11A	3/12E	3/13E	3/14E	3/15E	3/16E
Net Sales	1,419.4	1,512.0	1,540.0	1,561.0	1,595.0	1,716.0
(% Change)	-3.2%	6.5%	1.9%	1.4%	2.2%	7.6%
Goods Cost	317.6	434.0	401.0	419.0	440.0	476.0
(% of Sales)	22.4%	28.7%	26.0%	26.8%	27.6%	27.7%
Gross Profit	1,101.8	1,078.0	1,139.0	1,142.0	1,155.0	1,240.0
(Gross Margin)	77.6%	71.3%	74.0%	73.2%	72.4%	72.3%
SG&A Expenses	445.8	518.0	628.0	549.0	544.0	554.0
(% of Sales)	31.4%	34.3%	40.8%	35.2%	34.1%	32.3%
R&D Expenses	288.9	280.0	300.0	300.0	305.0	310.0
(% of Sales)	20.4%	18.5%	19.5%	19.2%	19.1%	18.1%
Operating Profit	367.1	280.0	211.0	293.0	306.0	376.0
(Operating Margin)	25.9%	18.5%	13.7%	18.8%	19.2%	21.9%
(% Change)	-12.6%	-23.7%	-24.6%	38.9%	4.4%	22.9%
Other Income (Loss)	4.5	0.0	-5.0	-5.0	-5.0	-5.0
Recurring Profit	371.6	280.0	206.0	288.0	301.0	371.0
(Recurring Margin)	26.2%	18.5%	13.4%	18.4%	18.9%	21.6%
(% Change)	-10.6%	-24.6%	-26.4%	39.8%	4.5%	23.3%
Extraordinary Items	0.0	-24.4	11.6	0.0	0.0	0.0
Pretax Profit	371.6	255.6	217.6	288.0	301.0	371.0
Tax	121.3	118.3	30.1	103.0	108.1	135.4
Minority Interest	-2.4	-2.3	-2.3	-2.3	-2.3	-2.3
Net Income	247.9	135.0	185.2	182.7	190.6	233.3
(% Change)	-16.8%	-45.5%	37.2%	-1.3%	4.3%	22.4%
EPS (Yen)	314.0	171.0	234.6	231.4	241.4	295.5
Fully Diluted EPS (Yen)	-	-	-	-	-	-
(% Change)	-16.8%	-45.5%	37.2%	-1.3%	4.3%	22.4%
Depreciation	92.6	125.0	124.0	124.0	124.0	124.0
Amortization of goodwill	14.1	21.0	30.0	0.0	0.0	0.0
Capex	148.9	40.0	30.0	30.0	30.0	30.0
DPS (¥)	180.0	180.0	180.0	180.0	180.0	180.0
CASH/EPS	260.6	305.3	391.7	350.5	360.5	414.6
No. of Shares	789.4	789.4	789.4	789.4	789.4	789.4
Cash Flow	266.0	285.5	324.4	307.3	312.1	332.2
Free Cash Flow	117.1	245.5	294.4	277.3	282.1	302.2
EBITDA	464.1	409.5	339.5	421.5	434.5	504.5

Note: E: Our estimates.

Source: Company data, Citi Investment Research and Analysis.

Takeda Pharmaceutical

Investment strategy

We rate the shares of Takeda Pharmaceutical Buy (1) with a target price of ¥4,400. Patent expiration is nearing for several key products (the anti-ulcer drug Lansoprazole went off-patent in November 2009, which will be followed by the diabetes treatment Actos in August 2012 and the antihypertensive Blopress in 2010-2013), so we think profits are likely to decline through FY3/13. At the same time, Takeda is developing a variety of new drugs, including the DDP4 inhibitor Nesina (launched in Japan in 2010, scheduled for US launch in 2012), the antihypertensive Edarbi (launched in April 2011), the anemia treatment Omontys (scheduled for launch in 2012), and the diabetes treatment TAK-875 (scheduled for launch in 2016). We therefore expect earnings to recover.

In May 2011, Takeda acquired Nycomed, a mid-sized firm in Europe (for €9.6bn, EV/EBITDA of 12.5x), and added this firm to the consolidated accounts in September 2011. Nycomed faces patent expiry on certain existing drugs, but in addition to the new COPD drug Daxas it has strong sales capabilities in emerging nations (Russia, Brazil, etc.), so it does have significant room for expansion. We think this will increase Takeda's growth potential.

Valuation

We use a DCF model with earnings forecasts for seven years to derive our target prices for the companies in our coverage. We assume a 3% risk-free rate, a 7% equity-risk premium, and a terminal growth rate of zero after seven years. We forecast betas and tax rates for each company and derive WACC. For Takeda, we assume a beta of 1.0 and a tax rate of 38%, deriving WACC of 7.68%.

As a result, we derive a target price of ¥4,400.

Risks

We see the following potential risks to our target price: 1) investors' valuation assumptions differing from ours; 2) unexpected developments concerning drug candidates; and 3) earnings deterioration at Nycomed, which Takeda has acquired. If these factors manifest themselves differently than we have anticipated, the share price may vary from our target price.

Appendix A-1

Analyst Certification

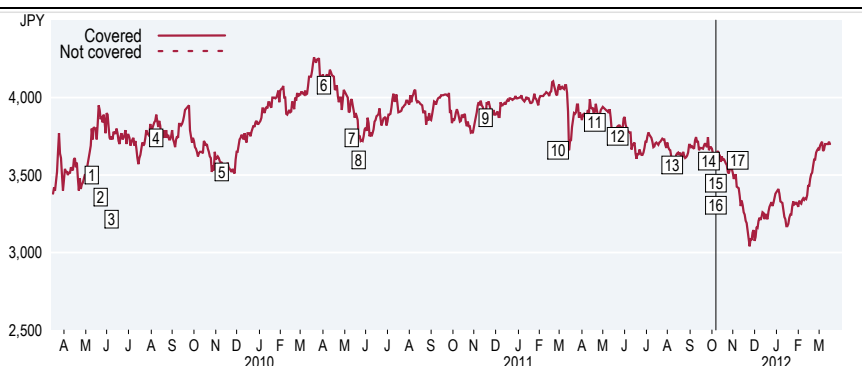
The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Takeda Pharmaceutical (4502)

Ratings and Target Price History Fundamental Research

Analyst: Hidemaru Yamaguchi



Date	Rating	Target Price	Closing Price
1 11-May-09	*2M	*4,000	3,800
2 22-May-09	2M	*4,100	3,860
3 8-Jun-09	2M	*3,900	3,750
4 10-Aug-09	*3M	*3,500	3,890
5 10-Nov-09	3M	*3,300	3,580
6 2-Apr-10	3M	*3,700	4,110

* Indicates change

Date	Rating	Target Price	Closing Price
7 12-May-10	3M	*3,600	3,990
8 21-May-10	*2M	*4,000	3,740
9 17-Nov-10	2M	*4,200	3,870
10 28-Feb-11	2M	*4,300	4,065
11 20-Apr-11	*1M	*4,500	3,910
12 22-May-11	1M	*5,500	3,805

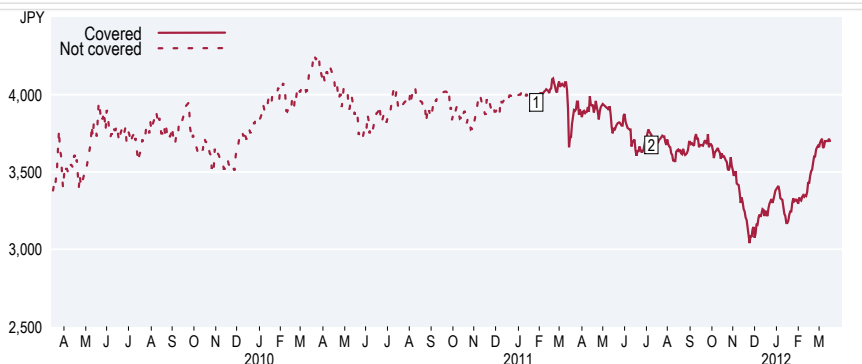
Date	Rating	Target Price	Closing Price
13 8-Aug-11	1M	*6,000	3,610
14 28-Sep-11	1M	*4,500	3,660
15 7-Oct-11	Stock rating system changed		
16 7-Oct-11	*1	4,500	3,635
17 8-Nov-11	1	*4,300	3,420

Rating/target price changes above reflect Eastern Standard Time

Takeda Pharmaceutical (4502)

Ratings and Target Price History Best Ideas Research Relative Call (3 Month)

Analyst: Hidemaru Yamaguchi



Date	Rating	Target Price	Closing Price
1 27-Jan-11	*ADD LP	-	3,990

* Indicates change

Date	Rating	Target Price	Closing Price
2 8-Jul-11	*ADD MP	-	3,740

Rating/target price changes above reflect Eastern Standard Time

Citigroup Global Markets Japan Inc. is acting as financial advisor to Dainippon Sumitomo Pharma Co.,Ltd. in respect to its announced acquisition of Boston Biomedical,Inc.

Citigroup Global Markets Inc. is acting as an advisor to Bain Capital in its acquisition of Physio-Control from Medtronic,Inc.

The Chairman of Citi serves as a director of Roche Holding AG.

Citigroup Global Markets Inc. or its affiliates beneficially owns 1% or more of any class of common equity securities of Bristol-Myers Squibb, Cardinal Health Inc, Johnson & Johnson Inc, Watson Pharmaceuticals, Inc.. This position reflects information available as of the prior business day.

Within the past 12 months, Citigroup Global Markets Inc. or its affiliates has acted as manager or co-manager of an offering of securities of Sinopharm, Baxter International Inc, Endo Pharmaceuticals Holdings Inc., Johnson & Johnson Inc, Medtronic Inc, Sanofi SA.

Citigroup Global Markets Inc. or its affiliates has received compensation for investment banking services provided within the past 12 months from Kyowa Hakko Kirin, Astellas Pharma, Dainippon Sumitomo Pharma, Mitsubishi Tanabe Pharma, Chugai Pharmaceutical, Otsuka Holdings, AmerisourceBergen Corp, Allergan Inc, Baxter International Inc, Bristol-Myers Squibb, Endo Pharmaceuticals Holdings Inc., GlaxoSmithKline PLC, Johnson & Johnson Inc, Medtronic Inc, Merck, Novartis AG, Pfizer, Roche Holding AG, Sanofi SA.

Citigroup Global Markets Inc. or its affiliates expects to receive or intends to seek, within the next three months, compensation for investment banking services from Takeda Pharmaceutical, Dainippon Sumitomo Pharma, Boston Scientific Corp, Merck, Watson Pharmaceuticals, Inc..

Citigroup Global Markets Inc. or an affiliate received compensation for products and services other than investment banking services from Takeda Pharmaceutical, Astellas Pharma, Dainippon Sumitomo Pharma, Chugai Pharmaceutical, Eisai, Rohto Pharmaceutical, Ono Pharmaceutical, Hisamitsu Pharmaceutical, Santen Pharmaceutical, Kyorin Holdings, Terumo, Daiichi Sankyo, Medipal Holdings Corporation, Mitsubishi Tanabe Pharma, Otsuka Holdings, Sinopharm, Kyowa Hakko Kirin, AmerisourceBergen Corp, Allergan Inc, AstraZeneca PLC, Baxter International Inc, C.R. Bard Inc, Bristol-Myers Squibb, Boston Scientific Corp, Cardinal Health Inc, Endo Pharmaceuticals Holdings Inc., GlaxoSmithKline PLC, Johnson & Johnson Inc, Eli Lilly, McKesson Corp, Medtronic Inc, Mindray, Merck, Novartis AG, Pfizer, Roche Holding AG, Sanofi SA, St Jude Medical Inc, UCB SA in the past 12 months.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as investment banking client(s): Astellas Pharma, Dainippon Sumitomo Pharma, Chugai Pharmaceutical, Suzuken, Johnson & Johnson Inc, Medtronic Inc, Otsuka Holdings, Baxter International Inc, Roche Holding AG, Takeda Pharmaceutical, Kyowa Hakko Kirin, Mitsubishi Tanabe Pharma, AmerisourceBergen Corp, Allergan Inc, Bristol-Myers Squibb, Boston Scientific Corp, Endo Pharmaceuticals Holdings Inc., GlaxoSmithKline PLC, Merck, Novartis AG, Pfizer, Sanofi SA, Watson Pharmaceuticals, Inc..

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, securities-related: Takeda Pharmaceutical, Astellas Pharma, Dainippon Sumitomo Pharma, Chugai Pharmaceutical, Eisai, Rohto Pharmaceutical, Ono Pharmaceutical, Hisamitsu Pharmaceutical, Santen Pharmaceutical, Kyorin Holdings, Suzuken, Daiichi Sankyo, Terumo, Medipal Holdings Corporation, Mitsubishi Tanabe Pharma, Otsuka Holdings, Sinopharm, Kyowa Hakko Kirin, AmerisourceBergen Corp, Allergan Inc, AstraZeneca PLC, Baxter International Inc, C.R. Bard Inc, Bristol-Myers Squibb, Boston Scientific Corp, Cardinal Health Inc, Endo Pharmaceuticals Holdings Inc., GlaxoSmithKline PLC, Johnson & Johnson Inc, Eli Lilly, Medtronic Inc, Mindray, Merck, Novartis AG, Pfizer, Roche Holding AG, Sanofi SA, St Jude Medical Inc, UCB SA.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, non-securities-related: Takeda Pharmaceutical, Astellas Pharma, Dainippon Sumitomo Pharma, Chugai Pharmaceutical, Eisai, Santen Pharmaceutical, Kyorin Holdings, Daiichi Sankyo, Terumo, Rohto Pharmaceutical, Ono Pharmaceutical, Hisamitsu Pharmaceutical, Suzuken, Mitsubishi Tanabe Pharma, Otsuka Holdings, Medipal Holdings Corporation, Sinopharm, Kyowa Hakko Kirin, AmerisourceBergen Corp, Allergan Inc, AstraZeneca PLC, Baxter International Inc, C.R. Bard Inc, Bristol-Myers Squibb, Boston Scientific Corp, Cardinal Health Inc, Endo Pharmaceuticals Holdings Inc., GlaxoSmithKline PLC, Johnson & Johnson Inc, Eli Lilly, McKesson Corp, Medtronic Inc, Mindray, Merck, Novartis AG, Pfizer, Roche Holding AG, Sanofi SA, St Jude Medical Inc, UCB SA.

Citigroup Global Markets Inc. or an affiliate received compensation in the past 12 months from Takeda Pharmaceutical, Astellas Pharma, Dainippon Sumitomo Pharma, Chugai Pharmaceutical, Eisai, Rohto Pharmaceutical, Santen Pharmaceutical, Kyorin Holdings, Ono Pharmaceutical, Hisamitsu Pharmaceutical, Suzuken, Terumo, Daiichi Sankyo, Medipal Holdings Corporation, Mitsubishi Tanabe Pharma, Otsuka Holdings.

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

The Firm is a market maker in the publicly traded equity securities of Endo Pharmaceuticals Holdings Inc., Roche Holding AG, Sanofi SA.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Investment Research & Analysis product ("the Product"), please contact Citi Investment Research & Analysis, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

Citi Investment Research & Analysis Ratings Distribution

Data current as of 31 Mar 2012

	12 Month Rating			Relative Rating		
	Buy	Hold	Sell	Buy	Hold	Sell
Citi Investment Research & Analysis Global Fundamental Coverage	52%	37%	11%	10%	79%	10%
% of companies in each rating category that are investment banking clients	44%	42%	40%	47%	42%	43%

Guide to Citi Investment Research & Analysis (CIRA) Fundamental Research Investment Ratings:

CIRA's stock recommendations include an investment rating and an optional risk rating to highlight high risk stocks.

Risk rating takes into account both price volatility and fundamental criteria. Stocks will either have no risk rating or a High risk rating assigned.

Investment Ratings: CIRA's investment ratings are Buy, Neutral and Sell. Our ratings are a function of analyst expectations of expected total return ("ETR") and risk. ETR is the sum of the forecast price appreciation (or depreciation) plus the dividend yield for a stock within the next 12 months. The Investment rating definitions are: Buy (1) ETR of 15% or more or 25% or more for High risk stocks; and Sell (3) for negative ETR. Any covered stock not assigned a Buy or a Sell is a Neutral (2). For stocks rated Neutral (2), if an analyst believes that there are insufficient valuation drivers and/or investment catalysts to derive a positive or negative investment view, they may elect with the approval of CIRA management not to assign a target price and, thus, not derive an ETR. Analysts may place covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and / or trading in the company's securities (e.g. trading suspension). As soon as practically possible, the analyst will publish a note re-establishing a rating and investment thesis. To satisfy regulatory requirements, we correspond Under Review and Neutral to Hold in our ratings distribution table for our 12-month fundamental rating system. However, we reiterate that we do not consider Under Review to be a recommendation.

Relative three-month ratings: CIRA may also assign a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the geographic and industry sector over a 3 month period. The relative call may highlight a specific near-term catalyst or event impacting the company or the market that is anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) will indicate the most and least preferred stocks in the universe of stocks under consideration, explaining the basis for this short-term view. This three-month view may be different from and does not affect a stock's fundamental equity rating, which reflects a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls correspond to a buy recommendation and least preferred calls correspond to a sell recommendation. Any stock not assigned to a most preferred or least preferred call is considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we correspond NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we do not consider NRR to be a recommendation.

Prior to October 8, 2011, the firm's stock recommendation system included a risk rating and an investment rating. **Risk ratings**, which took into account both price volatility and fundamental criteria, were: Low (L), Medium (M), High (H), and Speculative (S). **Investment Ratings** of Buy, Hold and Sell were a function of CIRA's expectation of total return (forecast price appreciation and dividend yield within the next 12 months) and risk rating. Additionally, analysts could have placed covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and/or trading in the company's securities (e.g. trading suspension). Stocks placed "Under Review" were monitored daily by management and

as practically possible, the analyst published a note re-establishing a rating and investment thesis. For securities in developed markets (US, UK, Europe, Japan, and Australia/New Zealand), investment ratings were: Buy (1) (expected total return of 10% or more for Low-Risk stocks, 15% or more for Medium-Risk stocks, 20% or more for High-Risk stocks, and 35% or more for Speculative stocks); Hold (2) (0%-10% for Low-Risk stocks, 0%-15% for Medium-Risk stocks, 0%-20% for High-Risk stocks, and 0%-35% for Speculative stocks); and Sell (3) (negative total return). For securities in emerging markets (Asia Pacific, Emerging Europe/Middle East/Africa, and Latin America), investment ratings were: Buy (1) (expected total return of 15% or more for Low-Risk stocks, 20% or more for Medium-Risk stocks, 30% or more for High-Risk stocks, and 40% or more for Speculative stocks); Hold (2) (5%-15% for Low-Risk stocks, 10%-20% for Medium-Risk stocks, 15%-30% for High-Risk stocks, and 20%-40% for Speculative stocks); and Sell (3) (5% or less for Low-Risk stocks, 10% or less for Medium-Risk stocks, 15% or less for High-Risk stocks, and 20% or less for Speculative stocks).

Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. Your decision to buy or sell a security should be based upon your personal investment objectives and should be made only after evaluating the stock's expected performance and risk.

NON-US RESEARCH ANALYST DISCLOSURES

Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Japan Inc.	Hidemaru Yamaguchi
Citigroup Global Markets Asia	Richard Yeh
Citigroup Global Markets Ltd	Mark Dainty, ACA; Andrew S Baum; Joanne Jerman
Citigroup Global Markets Inc	John T. Boris; George Hill; Matthew J Dodds

OTHER DISCLOSURES

The subject company's share price set out on the front page of this Product is quoted as at 20 April 2012 03:00 PM on the issuer's primary market.

Citigroup Global Markets Inc. and/or its affiliates has a significant financial interest in relation to AmerisourceBergen Corp, Allergan Inc, AstraZeneca PLC, Baxter International Inc, Bristol-Myers Squibb, Boston Scientific Corp, Cardinal Health Inc, Endo Pharmaceuticals Holdings Inc., GlaxoSmithKline PLC, Johnson & Johnson Inc, Eli Lilly, McKesson Corp, Medtronic Inc, Merck, Pfizer, Roche Holding AG, Sanofi SA. (For an explanation of the determination of significant financial interest, please refer to the policy for managing conflicts of interest which can be found at www.citiVelocity.com.)

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Citigroup Global Markets Inc. or its affiliates acts as a corporate broker to GlaxoSmithKline PLC.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Investment Research & Analysis (CIRA) does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of CIRA to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

Important Disclosures for Morgan Stanley Smith Barney LLC Customers: Morgan Stanley & Co. LLC (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Investment Research & Analysis (CIRA) research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to CIRA research reports.

Important disclosure regarding the relationship between the companies that are the subject of this CIRA research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.

For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

This CIRA research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of CIRA. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in **Australia** through Citigroup Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A., Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 110-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. <http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02>. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) ("CGMM") to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to 'wholesale clients' only as defined by s5C(1) of the Financial Advisers Act 2008 ("FAA") through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal

Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. ("CGMSPL"), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold/Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gassef, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different CIRA ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority. Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to CIRA's Products can be found at

https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product. With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs), CIRA concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual CIRA analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. CIRA simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by CIRA analysts to clients may vary depending on various factors such as the client's individual preferences as to the frequency and manner of receiving communications from analysts, the client's risk profile and investment focus and perspective (e.g. market-wide, sector

specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.

CIRA product may source data from dataCentral. dataCentral is a CIRA proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.

© 2012 Citigroup Global Markets Inc. Citi Investment Research & Analysis is a division of Citigroup Global Markets Inc. Citi and Citi with Arc Design are trademarks and service marks of Citigroup Inc. and its affiliates and are used and registered throughout the world. All rights reserved. Any unauthorized use, duplication, redistribution or disclosure of this report (the "Product"), including, but not limited to, redistribution of the Product by electronic mail, posting of the Product on a website or page, and/or providing to a third party a link to the Product, is prohibited by law and will result in prosecution. The information contained in the Product is intended solely for the recipient and may not be further distributed by the recipient to any third party. Where included in this report, MSCI sourced information is the exclusive property of Morgan Stanley Capital International Inc. (MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, redisseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI, Morgan Stanley Capital International and the MSCI indexes are services marks of MSCI and its affiliates. The Firm accepts no liability whatsoever for the actions of third parties. The Product may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the Product refers to website material of the Firm, the Firm has not reviewed the linked site. Equally, except to the extent to which the Product refers to website material of the Firm, the Firm takes no responsibility for, and makes no representations or warranties whatsoever as to, the data and information contained therein. Such address or hyperlink (including addresses or hyperlinks to website material of the Firm) is provided solely for your convenience and information and the content of the linked site does not in anyway form part of this document. Accessing such website or following such link through the Product or the website of the Firm shall be at your own risk and the Firm shall have no liability arising out of, or in connection with, any such referenced website.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST
