BGF Equities Company Research

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West African Gold Revisited

Notes from Field Trip

New Mines Coming on Stream, Exploration Expanding Resource Bases

Easier open pittable pickings with governments more sympathetic to mining

Investment Perspective: Following on from the successful West African trip last September, when we highlighted the potential of the gold fields in that region, BGF Equities hosted another visit in April 2010. We continue to believe that the West African gold stocks offer greater exploration upside than Australian brownfield projects, without the technical problems associated with going back to old projects. A virginal open pit operation carries much less risk than deepening old pits and proceeding underground. Recent events have shown that geopolitical risk is escalating in Australia with a government unsympathetic to mining. West Africa is one of the hottest places to be in the gold sector and will remain so.

Company	Share Price 11/5/10	Market Cap'n $m	Share Price 13/10/09	% Move Since 13/10/09	Issued Shares Mill.	Issued Options Mill.	Exercise Price	ASX Code
Adamus Resources	$0.45	$176m	$0.46	-2%	390	6	$0.20	ADU
Ampella Mining	$1.73	$308m	$0.54	220%	163	24.8	$0.67	AMX
Azumah Resources	$0.34	$64m	$0.18	89%	186	8	$0.22	AZM
Castle Minerals	$0.42	$41m	$0.27	56%	95.4	11.7	$0.35	CDT
Gryphon Minerals	$0.59	$129m	$0.43	37%	215	8.3	$0.33	GRY
Perseus Mining	$1.90	$795m	$1.48	28%	395	71	$1.28	PRU
Signature Metals	$0.025	$33m	$0.039	-36%	1,255	85	$0.015	SBL

Adamus	ADU's share price has been held back over the past six months due to multiple equity capital raisings, but the mine development is now fully funded. ADU is one of the safest plays with imminent production while having good upside potential for additional production from the refractory component and exploration generally. ADU offer good value at these levels.
Ampella	AMX has been a sensational performer but how long can the euphoria last? We feel that the shares have run ahead of themselves and the ability of the projects to deliver results to match heightened expectations. They are expensive relative to their peers at these levels notwithstanding other positives.
Azumah	AZM is playing a catch-up game in the market with the shares still looking cheap. Maybe this is because the management is not as promotional as others and it is leaning towards an earlier, more modest start-up operation of less than 100,000 oz pa. It continues to offer sound value with active exploration.
Castle	CDT is a thinly traded stock that has not done as much drilling as others, so the resource base is nominal. The capitalisation suggests that the market believes it can find at least one mill. oz, but this might only be the start of it given the extensive ground holding. Imminent drilling will add to interest.
Gryphon	GRY has a more complex geological setting but that complexity throws up potential for multiple styles of mineralisation. The first million ounces have not been difficult to find. We believe GRY has the potential to make quantum leaps with ongoing exploration. It is one of the better value exploration stocks.
Perseus	PRU stands head and shoulders above the rest with two projects, containing seven million ounces of resources, expected to be very profitable. Its powerful cash position minimizes financial risk. The market is yet to factor in the quality of its projects. The shares could easily double from here.
Signature	SBL is the minnow in the field in terms of market capitalisation. While it has been a good trading stock, it hasn't achieved upward momentum. Maybe this is because of the modest production to begin with, but it also suggests the market is more interested in money being spent on exploration as that is where the value adding equation is most leveraged. It is hard to see it getting any cheaper.

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Valuations and Project Parameters

The following table states the market capitalisations and the EV per ounce of ASX reported resources. It also details the scale and cost of gold mines that have either been announced, or that could be supported by resource bases already announced. The comments and conclusions are listed below.

		Valuation Tools		Capex Measures				Operational Parameters					
Company	First Pour	Mkt Cap'n A$m	EV/oz Resource	Capex $m	Mine Life yrs	Capex Payback		Plant Size mtpa	Annual Prod'n oz p.a.	Cash Cost	Spot Margin	Head Grade gpt	Recov Rate
						Yrs	Cover			US$/oz			
Adamus Resources	Jan 2011	$176m	$96/oz	$102m	10.7	1.4	7.5x	2.10	100,000	488	712	2.01	87%
Ampella Mining	> 2013	$308m	$244/oz	$120m	7.0	1.4	4.9x	2.00	130,000	550	650	2.00	90%
Azumah Resources	Jan 2012	$64m	$52/oz	$80m	7.0	1.6	4.3x	1.00	70,000	500	700	2.25	95%
Castle Minerals	> 2013	$41m	$329/oz	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gryphon Minerals	> 2013	$129m	$96/oz	$120m	7.0	1.1	6.1x	2.00	150,000	500	700	2.40	92%
Perseus (Ayanfuri)	Sept 2011	-	-	$160m	15.0	1.0	15.1x	5.50	230,000	500	700	1.30	90%
Perseus (Tengrela)	Dec 2012	-	-	$90m	7.0	0.8	9.3x	2.40	150,000	400	800	1.80	90%
Perseus (combined)		$795m	$109/oz						380,000				
Signature Metals	Jan 2011	$33m	$24/oz	$6m	5.0	0.5	9.2x	0.35	20,000	650	550	1.70	85%

Adamus, Azumah and Perseus production numbers reflect company announcements. The other companies are all based on BGF estimates. All resource statements are based on company releases.

Gold Price **$1,200/oz**

Timing of Developments

- **Adamus** will probably be the first into production with construction now 20% complete and the first gold pour scheduled for mid January 2011, but **Signature** has a chance of coming in a few weeks earlier if it can secure approvals in time. The 350,000 tpa CIL plant is currently on care-and-maintenance. Its refurbishment and recommissioning, essentially on tailings, could be achieved by December in the best case scenario.
- The largest of the Australian-owned Ghana development, **Perseus's** Ayanfuri Gold Project (recently renamed Central Ashanti Gold Project), is aiming for its first gold pour in Q3 2011, but it needs to receive EPA approval quickly in order to meet this objective. While the EPA should be procedural from here the final paperwork was still outstanding at the time of writing.
- Of the other companies, only **Azumah** has advanced its project to a pre-feasibility stage, preferring to get up and running with a cash flow to fund on-going exploration out of operating cash flows - a more cautious approach.
- In summary, expected production timelines are:

Within 1 Year	Adamus, Signature
Within 2 Years	Perseus, Azumah
More Than 3 Years	Ampella, Gryphon, Castle

EV Per Oz of Resource - *big variations to consider*

- The EV figures show that the market is placing a premium on some of the exploration companies with expectations of significantly more discoveries. What do the figures tell us? Look at Adamus and Perseus and accept that $100/oz is a real figure for imminent production. What does this suggest for exploration companies?

1. **Ampella** - the market is expecting another million oz to be discovered by Ampella. That is not unreasonable.
2. **Gryphon** - the market is not factoring in as much exploration upside as Ampella. I question this; there is just as much upside, though in a more complex geological setting, and the grade is better. It would be fair to say that the "discovery hole" is yet to be drilled, notwithstanding there is already 1.1 mill. oz.
3. **Azumah** - inappropriately priced in the market. It should be twice the market capitalisation on ounces already announced and there is an expectation of more ounces from an active drilling program. It offers a good value buying opportunity.
4. **Castle** - the market expects that Castle will find at least a million ounces, as this has been factored into the price. Given the huge land position and the initial indicators this should be comfortably achievable.
5. **Signature** - the shares look very cheap, but this is due to the ounces being a combination of tailings, free milling and refractory ore. Konongo is a brownfields gold opportunity that needs to have mining parameters applied to the resources. More information is needed.

Thus in summary;

- Adamus and Perseus are the benchmarks
- Azumah and Gryphon are cheap
- Ampella is expensive
- Signature is cheap, but tailings and brownfields
- Castle is on the start of the exploration journey

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Mine Lives - *> 7 year benchmark achievable*

- It is unwise to commence a gold mine with reserves of less than seven years, as anything less tends to place too much pressure on geologists to find more reserves in a timely fashion. Both Adamus and Perseus exceed this minimum, with Perseus having a 15 year life expectancy for its lead project.
- Mine lives of seven years for Ampella and Gryphon imply better than 80% conversion to reserves, which is aggressive. Thus it is implied that there will be resource increases needed to justify the scales we have assumed - probably increases to 1.6 mill. and 1.5 mill .oz respectively. This is achievable during 2010, in our opinion.
- The mine life for Signature is based on tailings with some additional mill feed from historical stockpiles, but it is too early to form a strong view on most of the 1.2 mill. oz resource. When we know how much of these are mineable we can run numbers on a totally new, larger treatment plant that could target 100,000 oz p.a.

Capex Payback Periods - *all good at < 2 years*

- The capex payback is an important measure of risk. Anything less than the 2 years can be viewed as an sound gold project. All of the companies have potential to payback in shorter periods, so they all get a tick.
- The most attractive project is Perseus's Ayanfuri project which has an exceptional payback period of less than one year.
- The Payback Cover multiple gives an idea of the bankability of a project. The higher the figure, the better the cover. The lower the figure the more likely it is that banks will insist on larger hedge books and higher proportions of equity funding. Again, Perseus is the stand out here. Signature looks good on this measure as it is a refurbishment and not a green fields development.

Market Capitalisations - *starting to get critical mass*

- The only large institutional stock is Perseus, with a market capitalisation of almost $800m. There is a long drop to Ampella at $308m, but it is difficult to call this an institutional stock due to the speculative nature and the early stage of the project. Adamus and Gryphon would come onto the radar screen of institutions with a resource bent, while the remaining stocks are yet to break the $100m threshold. Special interest and private clients dominate these registers.

Annual Production Levels - *100,000 oz starting point*

- Given the logistics of setting up an operation in Africa, a sensible minimum production level would be 100,000 oz p.a. This also puts a company on the map with respect to institutional interest. However, it is still seen as the beginning. In order to really command the attention of international players a level greater than 200,000 oz p.a. would be preferable.
- Of the companies listed it is only Perseus that is realistically looking at this scale. The others may get there, through expansions and corporate activity, but they are works in progress.
- Both Azumah and Signature do not yet offer the critical mass in their production plan yet. In the case of Azumah it is because of a more modest approach at the outset, while Signature is being pragmatic in utilizing the small plant that came with the acquisition. Both companies have the potential to graduate to a higher scale in due course.

So, the scales of production are;

- > 200,000 oz p.a. Perseus
- 100-200,000 oz p.a. Adamus, Ampella, Gryphon
- < 100,000 oz p.a. Azumah, Signature

Cash Operating Cost - *generally $450-$550/oz*

- The only companies that have released DFS-based cost estimates are Adamus and Perseus, both in the range of US$450-$500/oz. Costs vary from year to year and while it is easy to use average costs, it is a simplification. Companies will usually seek to front-end higher grade lower cost ore in the first couple of years to accelerate capex payback. Later year costs will be higher but they are subject to change depending upon discovery of additional good grade ore.
- We have generically used higher costs of $500-550/oz for the companies in Burkina Faso. In the case of Ampella there is no close grid power but Gryphon could benefit from lower cost grid power.

Head Grades - *generally +/- 2 gpt*

- As we know, "grade is king", but this has to be weighed up against economies of scale. The high throughput at Ayanfuri, combined with the ability to pre-concentrate ore prior to the CIL circuit, give Perseus a unique advantage. Despite having the lowest grade, it is also one of the lowest cost projects.
- Production grades will vary from exploration and resource grades when plant sizes and metallurgy are worked out and mining dilution is included. We have simply assumed the resource grades will be the head grades for companies such as Ampella and Gryphon, but these are likely to come down. We note that Gryphon's grade is the highest of these two.
- Signature's grade is low due to the tailings grade. Run-of-mine ore will be higher, and possibly above 3 gpt.

Recovery Rates - *both free milling and refractory ores*

- Rates are affected by ore types with free milling oxide ore offering the best recovery rates. A generic rate that can be usually achieved is 90%, with this falling if the grade is lower.
- Even though Perseus's Ayanfuri ore is associated with sulphides it is free milling, so its recoveries are not compromised.
- The Ashanti Belt in Ghana is known for refractory ore at depth, particularly when ore is proximate to the main Ashanti shear zone. The Salman pit at Adamus's project is refractory at depth but this ore has not been included in the project economics. It appears that the geology is similar to the Golden Star's mine, where they treat refractory ore through a BIOX plant, achieving a 70% recovery at cash costs of US$700/oz. If this is applicable to Adamus there could be a significantly larger resource to consider.

Resources, Reserves, Hedging and Corporate

Resources: The following table provides the latest reserves and resources released to the ASX, on which production estimates have been based. Additionally, it provides a broad estimate of the reasonable exploration target for each company.

Company	Resource Analysis						Corporate Analysis			Hedging		
	JORC Res/Res'v P & P (Mill. Oz)	M/I/I	Conv.	Discov. Cost $/oz	Potential Resource Mill. oz	Geology Style	Cash in Bank	Debt	Key Shareholder	Mill. Oz	Price	Gain/ Loss
Adamus Resources	1.07	2.10	51%	n/a	3.00	Ashanti Belt	$50m	$76m	Macquarie 12%	0.29	$1,075	-$36m
Ampella Mining	0.00	1.20	n/a	4.00	2-3	volcanics, granites	$16m	$0	C'wealth 6.7%	0.00	$0.00	$0.00
Azumah Resources	0.00	1.10	n/a	n/a	2.00	sediments/quartz	$7m	$0	Macquarie 15%	0.00	$0.00	$0.00
Castle Minerals	0.00	0.10	n/a	n/a	1-2	sediments/quartz	$8m	$0	Mike Ivey 6.4%	0.00	$0.00	$0.00
Gryphon Minerals	0.00	1.10	n/a	10.00	2-3	granodiorites	$23m	$0	IFC	0.00	$0.00	$0.00
Perseus (Ayanfuri)	2.14	5.00	43%	10.00	7.00	granite		$80m		0.18	$0.00	$0.00
Perseus (Tengrela)	0.00	1.00	n/a	10.00	2.00	granitic intrusives		$0m		0.00	$0.00	$0.00
Perseus (combined)	2.14	6.00	n/a	10.00	9.00		$200m	$80m	Macquarie 11.9%	0.00	$0.00	$0.00
Signature Metals	0.00	1.10	n/a	n/a	2.00	sediments/quartz	$7m	$0	Macquarie 15%	0.00	$0.00	$0.00
	Perseus has an offer of finance for US$50-80m, with hedging requirements of 170-230,000 oz, but it has not locked in yet.											

Potential for More Ounces - *significant blue sky appeal*

- The reason we are keen on West Africa is the great exploration potential. Every company visited has potential for at least two million ounces, and perhaps many more given time.
- The discovery cost per ounce can vary according to accounting methodology, but we can generally expect the region to provide new gold at about $10/oz.

Cash and Debt - *companies are generally well funded*

- Adamus and Perseus have substantial cash positions but these will be largely consumed in the construction stages of their projects. Adamus budgets to have $10-15m in the bank on commissioning early in 2011.
- Perseus is yet to decide how much debt to draw upon in its first development. The offer is for up to US$80m, but it may chose to draw down only $50m if this enables a lower hedge program. Roughly speaking, it believes it can repay its debt with cash flow from the first six months of operation.
- The exploration companies will consume their cash exploring and require additional funds before completion of a BFS.
- Ampella has announced a $13m exploration program.
- Gryphon is the best funded of the explorers.
- Signature is raising funds now. We have assumed it raises $5m at 2¢.
- Castle is seeking to raise funds of about $5m. We have assumed this will be done at 38¢, but readers need to confirm this with the ASX release.
- Azumah will need to raise money within three months if it is going to keep exploring aggressively.
- We do not expect that any of these companies will have difficulty raising further funds given the high success rates in drilling and the recent strength in the gold price.

Major Shareholders - *becoming insitutionalised*

- We frequently see problems where individuals have too high a stake in listed companies as they often are too proprietary in their behavior and do not sufficiently consider the preferences of general investors.
- Adamus has had its problems in making decisions on capital raisings because of this problem, but dilution should have lessened the concern here.
- Perseus has a truly international share register with institutions from Australia, North America and Europe appearing.
- There is a perception that the major shareholders of Signature might not be long term investors, given previous corporate ventures. This may adversely impact share market valuations.
- Azumah seems to have a fairly open register.
- Gyphon is well represented by quality investing institutions.
- Ampella has quite a fluid register with the original promoters being diluted by share issues, and there is at least one corporate shareholder.
- Interestingly, Macquarie Bank is all over this sector, being sizeable shareholders in Adamus, Azumah and Perseus. In theory this should mean that these are sound companies as Macquarie's mining team is known to be astute.

Adamus Resources (ADU)

Share Price: $0.45 Mkt Cap: $176m Cash Balance: $50m (but spending on construction)

Lead Project	Southern Ashanti
Ownership	90% ADU, Government 10% (on development)
Proven/Probable Reserve	1.07 mill. oz (100% of project)
Resources	2.1 mill. oz (100% of project)
Status	Construction - 20% completed
Proposed gold production	10,000 oz p.a. (ADU share 90,000 oz p.a.)
First Production	January 2011
Mine Life	10 years
Capex	US$102m
Cash Costs	Year 1 and 2 US$400/oz, Mine Average US$488/oz
Hedging	290,000 oz at $1,075/oz (50% of production over first five years).
Debt Finance	Secured - US$70m plus US$6m Gold Bond Facility
Recent Share Issue	March 2010 - placement at 36¢, 1 for 5 issue at 36¢, raising $30.5m

Ampella Mining (AMX)

Share Price: $1.73 Mkt Cap: $308m Cash Balance: $16m (30/3/10)

Lead Project	Batie West, SW Burkina Faso
Ownership	90% AMX, Government 10% (on development)
Proven/Probable Reserve	not calculated yet
Resources	1.2 mill. oz at 2 gpt
Status	continuing with exploration drilling
Proposed Gold Production	nothing firm, but potential for 100,000 oz + p.a.
First Production	not before 2013
Mine Life	could be seven years, at 130,000 oz p.a.
Capex	US$100-150m, depending upon size
Cash Costs	expects US$500-550/oz, based on other projects
Current Drilling	one RC rig and seeking another plus auger rigs
Recent Fund Raising	December 2009 - raised $16.5m with placement at 55¢

Azumah Resources (AZM)

Share Price: $0.34 Mkt Cap: $64m Cash Balance: $7m (30/3/10)

Lead Project	Wa, in Northern Ghana
Ownership	90% AZM, Government 10% (on development)
Proven/Probable Reserve	not calculated, but 300,000 oz recoverable oz from Bepkong/Kunche
Resources	1.1 mill. oz at 2 gpt JORC Indicated and Inferred (100% of project)
Status	pre-feasibility study due Q2 2010, continuing exploration drilling
Proposed gold production	65,000 oz p.a. (AZM share 58,500 oz p.a.)
First Production	maybe 2012
Mine Life	5-6 years on current resource
Capex	A$80m
Cash Costs	US$500/oz
Electricity Costs	10-12¢ kWh/hr
Latest Raising	Nov 2009 - placed 21.2 mill. shares at 20¢ ($4.24m)

Castle Minerals (CDT)

Share Price: $0.42 Mkt Cap: $41m Cash Balance: $8m (post placement May 2010)

Lead Project	Wa, Northern Ghana
Ownership	90% CDT, Government 10% (on development)
Proven/Probable Reserve	not calculated yet
Resources	100,000 oz in Southern Ghana near Adamus
Status	commencing drilling early June
Proposed Gold Production	too early to state
First Production	not before 2013
Mine Life	target a minimum of 7 years
Capex	US$100-150m, depending upon size
Cash Costs	expects US$500-550/oz
Current Drilling	2,500m of RC planned, with RAB drilling
Recent Fund Raising	May 2010 - placed 13.1 mill. shares at 38¢ ($5m)

Gryphon Minerals (GRY)

Share Price: $0.59 Mkt Cap: $129m Cash Balance: $23m (30/3/10)

Lead Project	Banfora, SW Burkina Faso
Ownership	90% GRY, Government 10% (on development)
Proven/Probable Reserve	not calculated yet
Resources	1.1 mill. oz (100% of project); 14 mill. tonnes at 2.4 gpt
Status	continuing with exploration drilling
Proposed Gold Production	nothing firm, but potential for 100-200,000 oz p.a.
First Production	not before 2013
Mine Life	target a minimum of 7 years
Capex	US$100-150m, depending upon size
Cash Costs	expects US$500-550/oz
Current Drilling	RC/DD and RAB
Recent Fund Raising	November 2009 - placed 40 mill. shares at 50¢ ($20m)

Perseus Mining (PRU)

Share Price: $1.90 Mkt Cap: $795m Cash Balance: $200m (post placement)

Lead Project	Central Ghana Gold Project (Ayanfuri), Ghana
Ownership	90% ADU, Government 10% (on development)
Proven/Probable Reserve	2.1 mill. oz (100% of project)
Resources	5.2 mill. oz (100% of project)
Status	Awaiting EPA approval, then construction commences
Proposed gold production	Year 1, 230,000 oz p.a., Years 1-4 average 220,000 oz
First Production	Q3 2011
Mine Life	> 10 years
Capex	US$160m for a 5.5 mtpa plant
Cash Costs	Year 1 and 2 US$392/oz, Mine Average US$494/oz
Electricity Costs	8-10¢ kWh/hr - 4 km from a 16KV line
Hedging	May hedge 170-230,000 oz, depending on debt level
Debt Finance	Offer on the table for US$80m
Recent Share Issue	April 2010 - placed C$91m in Canada at $1.94, and A$29m in Aust.

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Signature Metals (SBL)

Share Price: $0.025 Mkt Cap: $33m Cash Balance: $8m (post placement)

Lead Project	Konongo, Ashanti Gold Belt, Ghana
Ownership	90% ADU, Government 10% (on development)
Proven/Probable Reserve	2.1 mill. oz (100% of project)
Resources	1.1 mill. oz (100% of project)
Status	refurbishing 350,000 tpa plant
Proposed gold production	Late 2010, 20,000 oz p.a.
First Production	Q4 2010
Mine Life	5 years initially
Capex	US$8m for a 350,000 tpa plant
Cash Costs	US$650/oz on tailings but could be lower on ROM ore
Electricity Costs	8-10¢ kWh/hr
Hedging	Nil
Debt Finance	Nil
Recent Share Issue	Raising $5m at 2¢ in May 2010 - not complete at time of writing

Disclosure The author own shares in Azumah and Perseus. BGF Equities has received fees from capital raisings for Ampella, Azumah and Perseus, and may receive fees from other companies in the ordinary course of business.