

RUSSIA, THE SAUDI ARABIA OF STEEL

This report initiates our coverage of the steel sector as a whole, and argues that despite the impressive run by steel stocks this year, there is still room for more share price appreciation.

Russian steel is unquestionably the world leader. The Russian steel industry is one of the largest in the world, producing 59.7mn tons in 2002, or 7% of the world total. Additionally, Russian steel companies are among the most profitable in the world, on the back of low energy, labor and raw material costs.

Big enough to matter, but small enough to go unnoticed, until now. The Russian ferrous metals industry accounts for 8% of total Russian industrial output, while oil and gas accounts for 20%. Despite this size, the markets have not given much attention to the steel industry, as the lack of transparency, low liquidity, and the low profile of the key players has kept it off the radar screen.

Both an export exposure and a domestic industry play. Forty-six percent of Russian steel is exported and the remainder is consumed domestically; Russia is the world's largest exporter and plays a significant role in setting international prices and meeting marginal demand. On the domestic side, the Russian steel industry has benefited from economic growth that has increased demand for greater quantities and higher value steel. Additionally, due to logistics and high domestic concentration, domestic steel prices are actually higher than exports.

A massive annuity play, rather than a growth story, Russian steel generates massive cash flows. The fact steel producers have low domestic costs means they can easily weather downturns, while reaping huge profits in market upturns. This fact, combined with a winding-down of capex in the next two to three years at most steel mills, means Russian companies will have huge scope to pay dividends. We estimate normalized free cash flow for the companies profiled at \$150mn-\$200mn per annum.

.....but when will it become transparent? The main challenge for investors is that majority steel mill owners are usually not that interested in the capital markets, as internally generated funds are more than enough to cover operations and capex. However, as these same owners look for an exit and possibly seek a similar business profile as the oil majors, this seems set to improve. **Based on fundamentals, all steel shares seem to offer upside to fair value; Severstal and NTMK are our top picks due to the liquidity they enjoy and signs of improving transparency and corporate governance.**

Our top picks are Severstal and NTMK

	MMK	Severstal	NLMK	NTMK	ZSMK
Recommendation	Buy	Buy	Buy	Buy	Buy
Fair value per share (end 03)	\$0.24	\$127.64	\$516.56	\$0.85	\$78.01
Current price	\$0.20	\$108.00	\$315.00	\$0.45	\$35.00
Upside	19.4%	18.2%	64.0%	88.0%	122.9%

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INVESTMENT CASE

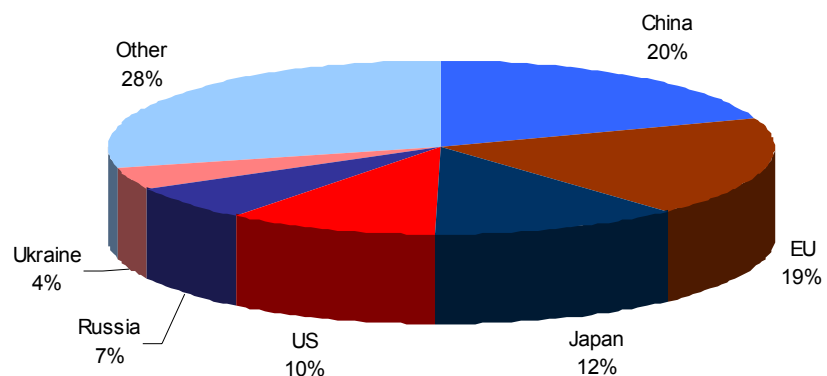
OVERLOOKED AND POORLY UNDERSTOOD

The ferrous metal industry is one of Russia's largest – accounting for 8% of the country's industrial production, against 20% for the oil and gas sector. Russia produces 7% of global steel and is the world's largest exporter. Given the sector's global market power and unparalleled profitability, from an international perspective, it could be said Russia is the Saudi Arabia of steel.

Russian steel: a world leader

The Russian steel industry is one of the largest in the world, producing 59mn tons of steel in 2002, or 7% of the world's total. Unlike most countries' steel industries, Russia's is a major exporter, with 46% going to foreign markets, while the remainder is consumed domestically. In absolute terms, Russia is the world's largest exporter and plays a significant role in setting prices and meeting marginal demand. On the domestic side, the Russian steel industry has benefited from economic growth that has increased demand for greater quantities and higher value steel.

World steel output: Russia is the fifth largest steel producer



Source: U.S. Geological Survey

The main players in the Russian steel market are MMK (Magnitogorsk Metal Plant), Severstal, NLMK (Novolipetsk Metal Plant) and Evrazholding. Evrazholding is primarily comprised of NTMK (Nizhnetagil Metal Plant) and ZSMK (Zapsib Metal Plant). In general, the top three companies, MMK, Severstal and NLMK, are referred to as the "big three." Another major producer, Evrazholding, has two steel subsidiaries that are in the "middle five." Our four profiled companies (five steel mills) together make up more than 70% of steel produced and sold in Russia. They are also the most interesting for portfolio investors, as they have the necessary scale to both attract attention and have an acceptable free float in value terms.

Major Russian steel players: industry is highly concentrated

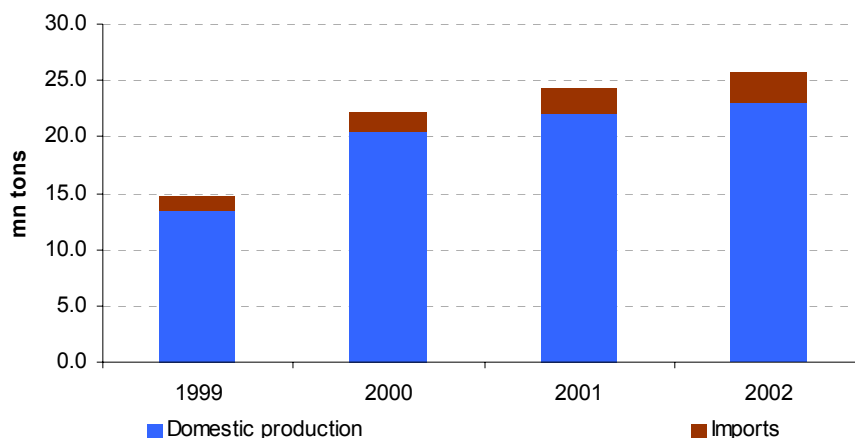
		Output 2002, mn tons		% of total	
		raw steel	rolled steel	raw steel	rolled steel
Big three	MMK	11.0	9.8	18%	20%
	Severstal	9.6	8.5	16%	17%
	NLMK	8.6	8.0	14%	16%
Middle five	ZSMK	5.7	4.6	10%	9%
	NTMK	5.3	4.7	9%	10%
	Mechel	3.9	2.6	7%	5%
	NOSTA	2.9	2.1	5%	4%
	KMK	2.2	2.0	4%	4%
Mini-mill	OEMK	2.0	2.0	3%	4%
	Russia total	59.7	48.7	100%	100%
	Top 3	29.2	26.3	48%	53%
	Top 3 + Evrazholding	42.4	37.6	71%	77%

Source: Company data; Aton estimates

We have not investigated other medium-sized steel mills, since there is limited potential for investment. Mechel, Russia's sixth largest mill, is majority owned by the Mechel Steel Group, which has explicitly said it has no intention of consolidating minority shareholders. NOSTA, the seventh largest mill, is in the process of being liquidated to settle more than \$300mn in debt. KMK has already been liquidated and its assets are owned by entities close to Evrazholding, and OEMK is supermajority owned by Gazprom (indirectly).

Both an export and a domestic play

The steel industry straddles two diverging economic trends. One, the industry is a major exporter and earns "hard currency" in a readily observable international market. In this sense the steel market offers investors what has been the traditional play on Russia, commodity exporters that earn foreign currency and have their revenues isolated from Russian domestic issues. The steel companies have certainly been active and successful on the international markets, so much so that multiple countries have introduced quotas and tariffs to keep their products out. On the other hand, Russian steel is a direct play into the resurgence of Russian industry and overall economic growth. Massive construction projects, particularly in the form of Moscow offices and residences, Siberian oil & gas infrastructure and railroad reconstruction to name a few, all point to an increase in Russian steel demand.

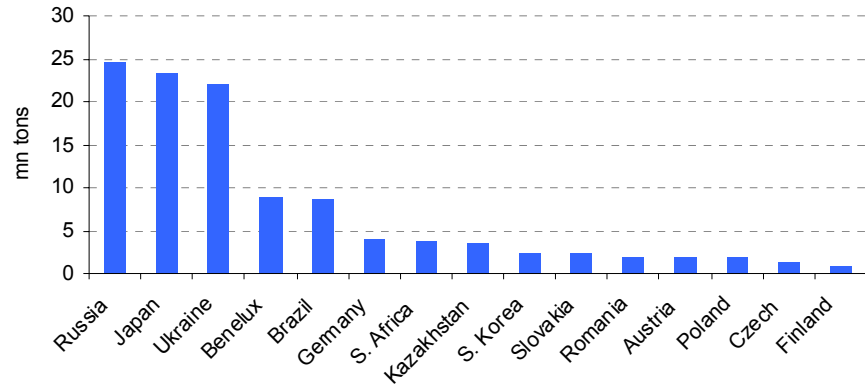
Russian steel consumption rising


Source: Goskomstat; State Customs; Aton estimates

However, for the next two to four years, exports are likely to remain at around the 50% level. The export market differs in product composition to the domestic market as import

tariffs have been imposed by many countries to protect domestic steel; as a result, Russian steel mills have been forced to direct low value products, usually not blocked by tariffs and quotas, to export markets, while directing higher value products to the domestic market, where growing demand and import substitution are creating new opportunities for Russian mills.

Net steel exports 2001: Russia is the leader



Source: International Iron and Steel Institute, NLMK

In the medium- to long-term, the export portion of Russian steel revenues will likely shrink, as domestic economic growth will demand increasing quantities of steel. This is important as certain key export markets are set to contract. For example, the Chinese market, which takes about 16% of Russian steel exports, is set to shrink, as increases in domestic production displace imports. Finally, Russian steel mills prefer the domestic market as they receive higher revenue per ton domestically and are able to coordinate activity between mills to keep prices up and share customers, thus providing for revenue stability.

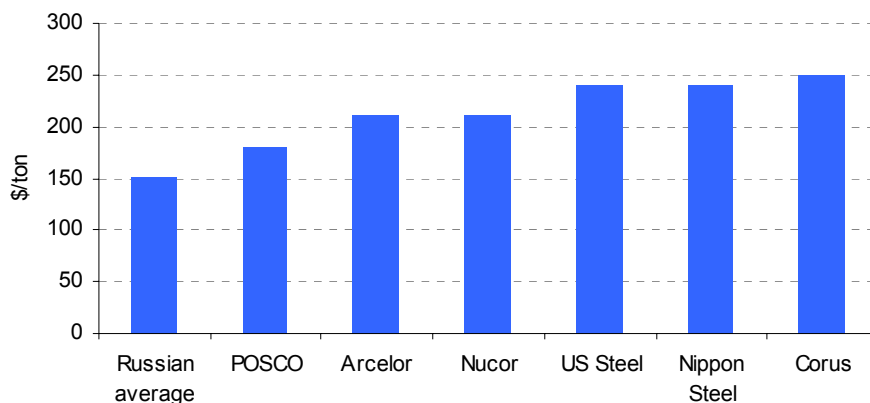
It is just cheaper in Russia to make steel

“Watch the costs and the profits will take care of themselves.”

Andrew Carnegie

While most developed nations seem to have accepted the fact that there is no economic rationale for domestic textile manufacturing, these countries have been slow to adopt the same wisdom for the steel industry. Russia is one of the lowest cost producers of steel in the world due to its abundance of low-cost energy, low labor costs and lower raw material costs. Labor costs alone are a major issue, as salary levels for steel workers in developed nations are from 10- to 15-times higher. Although steel workers in developed countries are more efficient, they are not efficient enough to offset their higher cost, meaning the cost of one “Russian labor unit” is 50%-80% lower. Gas costs are 70%-80% cheaper in Russia, and electricity costs are 60%-80% cheaper.

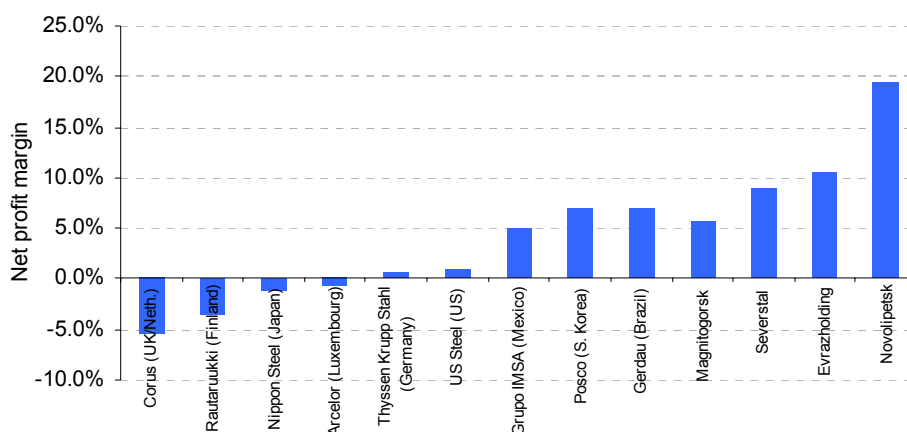
Production cost of one ton of HR coil



Source: CRU Group; Aton estimates

In response to higher prices, steel mills in developed countries have moved further up the value chain, so that average revenue per ton of steel sold is \$500-\$600, while average Russian steel revenue per ton is about \$210. Despite these higher revenues, developed country mills are still unable to recoup their costs, and have consistently shown poor profitability.

2002 net margin at major steel companies: Russia far ahead



Source: Company data; Aton estimates

Russian mills have also moved up the value added chain, but only in product areas where there is a shortfall on the domestic market – hence current steel projects are aimed at producing galvanized steel and steel for wide diameter pipe, both of which are currently being heavily imported into Russia.

When will steel companies embrace the capital markets?

The real question is not if, but when Russian companies will come to the capital markets. The fact is, due to the massive cash flows these companies generate there is little pushing them to go to either the debt or equity markets. All of our models show that each company can pay down all of its existing debt easily and have no need for future borrowing. Against this backdrop, investors must pay particular attention to the majority owners of Russia’s mills, as their motivations and backgrounds will likely give an insight into future capital market moves. Severstal has already made the commitment to the equity markets by starting to implement a GDR program and setting a dividend policy of 25% of annual IAS net income. In addition, the company’s majority owners have said they will sell off part of

their stake to raise the free float from the current 9% to 15%. MMK does not actively participate in the equity markets, although the company has raised limited amounts of ruble debt and has a €100mn Eurobond outstanding. The government owns 24% of the company, which it will auction off by the end of this year, and there are several industrial groups that are likely to participate. Whether MMK stays the same (bad for minority investors) or improves, depends then on who wins the auction. NLMK is the most attractive steel mill in terms of profitability and our valuation. However, the majority owners, which control 96% of the stock, see no reason to go to the capital markets for either debt or equity financing; moreover, they have been in the steel industry their entire lives, meaning they are not interested in simply flipping their holdings. Evrazholding is quite different to the big three, as it is a recent creation led by a group of Moscow-based former mathematicians and physicists. These owners are likely to enter the equity markets sooner rather than later, as they seek to value their assets, create an exit route, and possibly use their equity as an acquisition currency.

Minority shareholder issues

	MMK	NLMK	Severstal	Evrazholding
Transparency	Medium	Medium	High	Low
Interested in raising profile in equity markets	No	No	Yes	Unclear
Consolidation risk	Low	Very low	Medium	High
Ownership concentration	Medium	Very high	High	Medium

Source: Aton estimates

In our valuation models we have used quite conservative discount rates to take these risks into account. As a result, the fair value of our profiled steel mills is set to improve, as the steel owners either execute their stated capital market plans, or begin to formulate them, which would result in the lowering of our discount rates.

Cash flow and capex

Making up for the neglect of the 1980s and capitalizing on high steel prices, all of the steel companies profiled plan to invest heavily in asset modernization and replacement in the near future. This capex should set the stage for Russian steel to maintain its competitive edge and profitability going forward.

Capex will be high for the next two to three years: asset replacement & modernization

Capital expenditures, \$mn	2001	2002	2003 F	2004 F	2005 F	2006 F
Evrazholding	39	56	136	150	150	120
NLMK	141	154	215	225	230	150
MMK	287	204	180	180	100	145
Severstal	97	198	363	190	140	100

Source: Company data; Aton estimates

However, the companies' high capex plans need to be put in the context of operating cash flow. Russian companies are expected to do very well in the next couple of years on the back of high global steel prices and it is no accident that this forecast heavy capex coincides with a favorable steel price environment.

Operating cash flows to exceed capex by a wide margin

Operating cash flow, \$mn	2001	2002	2003 F	2004 F	2005 F	2006 F
Evrazholding	65	264	725	831	722	566
NLMK	215	497	772	729	647	568
MMK	267	212	776	721	643	548
Severstal	295	417	736	793	701	582

Source: Company data; Aton estimates

The massive cash flows Russian steel mills generate are both a blessing and a curse. On the one hand, investors benefit from these companies taking advantage of low production costs and relatively low capital expenditure needs. On the other hand, precisely because of this, these companies do not particularly need the capital markets, thus limiting the opportunities for portfolio investors to get exposure to this story.

Forecast and valuation summary

The main drivers for our forecasts have been revenues and the key items in COGS. In relation to revenues, we have assumed that companies will gradually shift the sales breakdown from export to domestic markets. In conjunction with this, we have assumed a shift in product output that matches the pattern of domestic consumption of higher value steel and export consumption of lower value steel. In terms of COGS, we have divided the main items of labor, iron ore and alloys, coal and energy into separate cost segments. Slight salary rises are expected to be offset by declining payroll numbers so that total labor costs will not significantly rise over the relevant period. As the domestic price of iron ore and alloy metals approaches international levels over the next two to three years, these costs will also remain stable; and we believe coal will exhibit the same trend as iron ore. Energy costs are set to rise substantially, though, as the government begins to deregulate the domestic gas market and Gazprom implements gas price hikes. We have used forecasted gas price rises as a proxy for electricity price increases as well. We therefore anticipate that total energy costs will double by 2006.

DCF valuation summary

	MMK	Severstal	NLMK	Evrazholding	NTMK	ZSMK
Beta (unlevered)	2.25	1.50	2.00	2.50		
Cost of equity	20.8%	16.1%	18.1%	22.5%		
Cost of debt (after tax)	7.6%	7.6%	7.6%	9.1%		
WACC	18.8%	15.5%	18.1%	20.1%		
DCF value, \$mn	2,562	2,846	2,728	2,589	1,252	1,157
Terminal as % of total	20.3%	27.9%	28.7%	16.9%		
Fair value per share	\$0.24	\$127.64	\$516.56		\$0.85	\$78.01
Current price (22/9/03)	\$0.20	\$108.00	\$315.00		\$0.45	\$35.00
Upside	19.4%	18.2%	64.0%		88.0%	122.9%

Source: Company data; Aton estimates

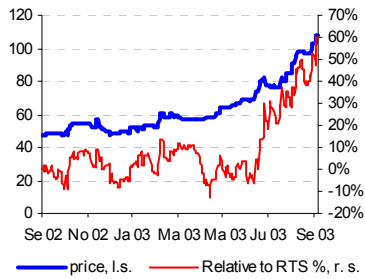
In terms of capital structure, we have not made forecasts for the companies, although we have assumed that all available cash will be used to pay down debt first, and then accumulate on the balance sheet. We have made no assumption on future dividend payments, although the hefty cash balances our profiled companies are forecasted to have suggest there will be much scope for dividends if the majority owners chose to do so.

Conclusion and recommendation

We believe that the market is not fully aware of the true situation in the Russian steel sector and that this report will help clarify the situation for investors in relation to the opportunities and threats the Russian steel industry faces. Having said that, the companies profiled are, by Russian standards, fairly open with their information, all reporting either IAS or GAAP accounts, and making information fairly readily available.

The main pitfall to analyzing the sector is the lack of clear, observable prices for products sold. Although steel is a commodity, it is a commodity with many different sub-products,

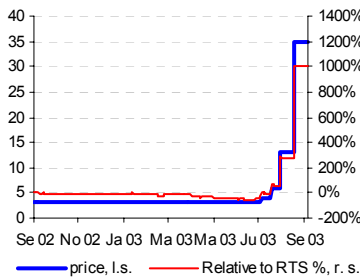
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each with different characteristics and prices. We have used a conservative approach to forecasting revenues, and despite this, it seems Russian steel mills are set to post extremely good performances in 2003-2004. If 1H03 RAS results are any indication of full-year IAS results, all of the steel companies profiled are set to enjoy +20% net margins, which are very high for the steel industry and would show just how competitive Russian steel is relative to the rest of the world.

We believe the Russian steel is the next sector to enjoy concentrated investor attention and it is set to emerge from the “second tier” to the first in a relatively short space of time.

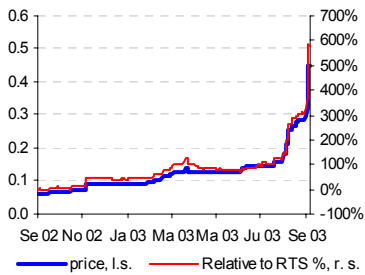
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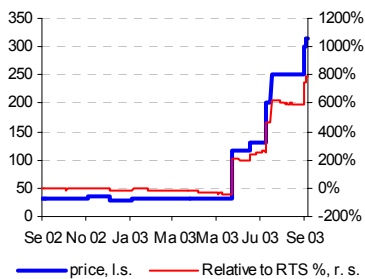
Recommendations: yes, everything is a Buy

Ticker (Bloomberg)	Recommendation
NLMK (Novolipetsk)	Buy
NFMF	
MMK (Magnitogorsk)	
MAGN	Buy
MAGNP	
Severstal	Buy
CHMF	
NTMK (Nizhnetagil)	Buy
NTMK	
ZSMK (Zapsib)	Buy
ZSMK	
ZSMKP (no ticker)	

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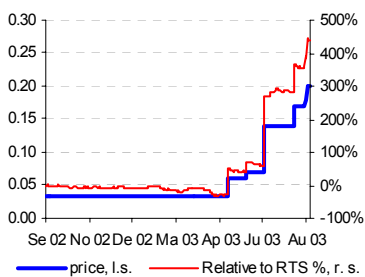


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We do note that investors should pay particular attention to Severstal and NTMK, as they are the most liquid of the profiled stocks in this report with fairly transparent pricing as well as steadily improving transparency and corporate governance practices. However, we also reiterate that we have been very conservative with our risk discount for NLMK, MAGN and ZSMK, so that any improvement in liquidity could have a significant impact on fair value due to lower discount rates.

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INDUSTRY OVERVIEW

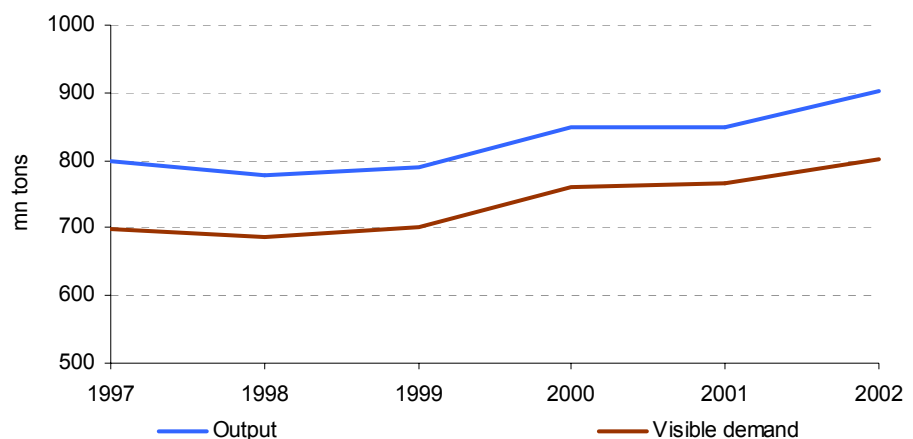
THE INTERNATIONAL STEEL INDUSTRY

Beset by over-capacity and low concentration, the global steel industry has endured downward price pressures for decades. However, just as many other heavy, labor intensive industries have moved from developed countries to developing ones, steel is likely to follow suit in the longer run. The main driver is that there are more jobs and value-creating opportunities available from using steel as an input than from making steel itself; as a result, steel mills in low labor cost areas are likely to be long-term survivors.

A dying industry in some countries, a growing industry in others

2002 was a banner year for steel, as global production – up 6% to 903mn tons – and global consumption – up 5% to 802mn tons – hit new highs; and judging from 1H03, this year looks set to be even better. But the steel industry has many structural problems that will not go away without significant pain for many producers. For starters, the global steel industry is highly fragmented and plagued with over-capacity. As a result, the top steel company accounts for no more than 4% of total world output, and total output consistently exceeds demand by at least 10%, resulting in heavy downward pressure on prices. This has seen many steel mills, particularly in developed countries, unable to produce the profit margins or cost flexibility needed to survive the long-term effects of the industry’s overcapacity. For example, 28 steel companies in the U.S. have gone bankrupt since 2000, despite import tariffs and quotas intensifying in the last decade, 13 directed specifically against Russian steel. However, these government bids to prop up domestic steel companies have not been very effective as despite these trade restrictions many steel companies show persistent losses, particularly in developed countries where high labor and energy costs have thwarted efforts by steel companies to turn a profit.

World steel output and visible demand: too much steel being made

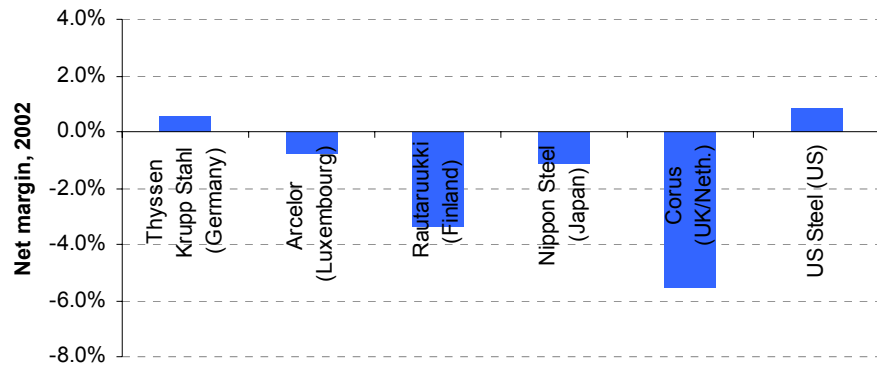


Source: International Iron and Steel Institute

The end of steel in Japan, the US and EU?

Steel mills in developed countries tend to either be loss making or make only marginal net income. In an effort to counter this, steel companies have employed new technologies that raise the revenue per ton a company can earn, but also have had a similar effect on steel making costs, so that even the most successful mills have not been able to show impressive profitability. For example Nucor, a U.S. company that uses modern technology and by all accounts is one of the best-run steel companies in the world, had a net margin of 3.4% in 2002 and 2.6% in 2001.

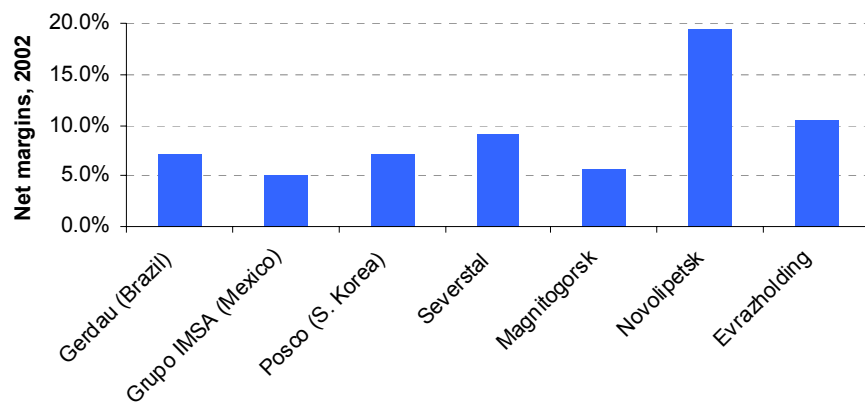
Developed country steel companies: not exactly leading the way



Source: Company data

Although developed country steel mills are suffering, their colleagues in developing countries, particularly in Russia, are performing much better. A major reason for this is low labor costs. With advances in technology and the modernization of assets, developing country steel mills are able to produce world-class quality steel at lower cost.

Developing country steel companies: impressive performance

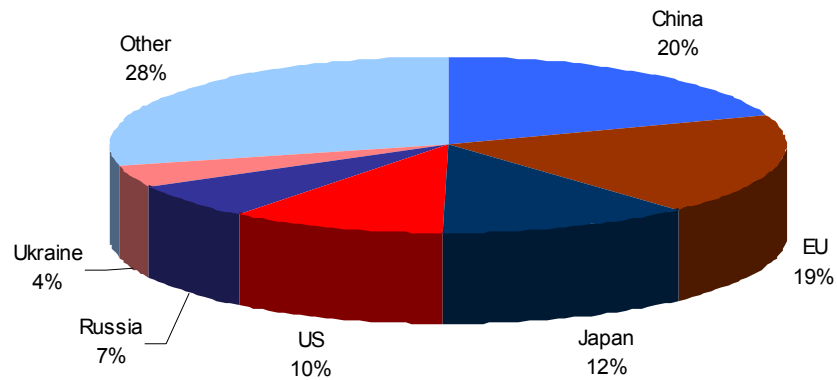


Source: Company data

The main international players

Steel is considered a strategic industry so every country wants to have domestic production “just in case,” although there are many countries where economic reason would dictate otherwise. Additionally, in the past few decades developing country economic growth plans called for the construction of steel mills, as they facilitate import substitution and employ many people. The result is that just about every country has some domestic steel production, which usually means governments have an interest supporting domestic steel mills with administrative measures.

World steel output, 2002



Source: US Geological Survey

M&A: not the answer

The problem with the high fragmentation and structural overcapacity is that there is little strategic reason for the industry to merge and consolidate. If a company buys a peer there is no need to have extra capacity to meet demand. However, if a company buys a peer and then closes it to take capacity out of the market it: (1) helps competitors as much as the acquirer; and (2) low industry concentration means the removed capacity will have little or no effect on the overall market. Additionally, there are limited opportunities for cost cutting synergies due to high labor and production concentration (everything happens on one site). As a result, the steel industry’s M&A activity has largely been a failure; moreover, all of the aforementioned reasons cannot hide the basic fact that steel made in developed countries is usually made unprofitably.

Conclusion

So what is the answer? Unfortunately, for most steel mills in developed countries, it is to close down. Just as many other industries have moved to places with lower costs, textiles for example, the same fate seems certain for steel. The reason unprofitable mills have been able to hold on for so long has been due to bureaucratic protection from imports and the politics of supporting strategic industries.

As low-cost developing country steel mills continue to out perform their developed country peers, we see two main trends in the steel market. One, pricing for steel should improve, as capacity is taken out of the market, eliminating a major ceiling to price improvement. Two, the prospects for freely traded high value steel, and not just semi finished products, should also improve, which will benefit modern plants with low costs bases. These two factors would positively impact Russia’s steel companies, as they would be able to enjoy higher revenues and sell a full range of products, including higher value steel, to the export market.

It may take several years for the market to make serious progress and behave more in line with market forces. However, as stated earlier, there are many more jobs and industries dependent on using steel than on making it, which means that it is in politicians’ best interests to free up the steel market. When this happens, Russian steel mills will be set to aggressively capitalize on these opportunities and likely come out on top of the long-awaited industry shakeout.

WHAT IS STEEL?

Steel is iron that has been impregnated with carbon through a process of intense heat. In addition to carbon, the iron in steel is alloyed with rare earth metals such as nickel, chromium, vanadium, and manganese. However, despite all the types and grades of steel, iron is still the dominant element, as carbon is usually less than 0.5% and alloying elements account for 3%-10% of steel by mass.

Types of steel products

Steel can be reworked almost endlessly and many of the later steel making stages can be done independent of one another, meaning that companies can use steel from other companies to produce new products. Additionally, most steel products are highly standardized and in many cases fungible, making the steel market quite commoditized.

The most basic type of steel product is semi-finished steel, which comes in two basic forms: slab and billet.

- Slab is steel that has been cast into a long, thick plate that is suitable for further rolling into sheets, coil, strips, and plates.
- Billet is steel cast into thick square beams that is suitable for further rolling into rods, beams, rails, and other construction materials

Finished products are made from semi-finished forms, although there can be several stages of steel actually being “finished.” We classify finished steel products into two basic groups: long products and flat products.

- Flat products

This includes the most ubiquitous and readily quoted steel types, hot rolled (HR) and cold rolled (CR) sheet. These products are mainly used for machine building, as sheets are used in such applications as car manufacture, stamped parts, casings and other machine engineering. Flat products are made from slabs, which are rolled while heated and pressed to form HR sheet. HR sheet can then be cleaned of any oxidation (pickled) and then further re-processed using pressure rather than heat to make CR sheet. There are also many other processes, such as coating (galvanizing) the sheet with a layer of zinc to improve corrosion resistance, etc.

- Long products

This class includes rods, bars and structural products such as rails and beams. The basic purpose of this product is construction, railroads and other infrastructure. Steel billets, which are milled and forged into the desired shape, also fall into this category; while rails are a specialty product that are not easily made with standard rolling equipment, and because of this certain steel mills often specialize exclusively in rail production.

Types of steel producers

In general, there are two types of steel mills, integrated and mini-mills, which differ significantly in terms of operations and asset base.

- Integrated mills

Integrated mills make steel from scratch, meaning that the plant takes iron ore, alloying elements and coke to make steel. The first step is to make pig iron from iron ore. The pig iron is then mixed with alloy metals to make different grades of steel. The steel is then rolled into either semi-finished or finished products. Integrated mills tend to use open hearth or oxygen converter furnaces, which (in Russia at least) burn natural gas. Because of the amount of tasks needed to be performed at integrated mills, the labor force is usually quite high. Additionally, the mill's assets are grouped together, so that thousands of people work in a very small space, which usually means the local community's fortunes are closely tied to the mill.

- Mini-mills

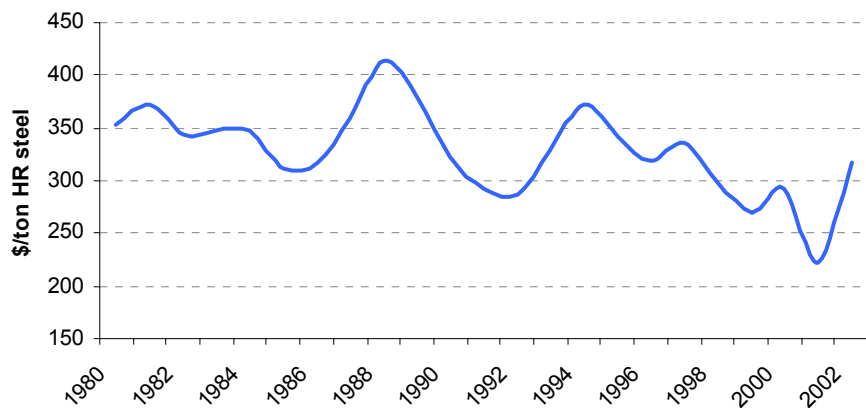
Mini-mills make their steel from scrap, effectively making them giant recycling shops. The main asset mini-mills employ is the electric arc furnace (EAF), which melts scrap steel with large electrodes. By recycling steel and having relatively simple infrastructure needs compared to integrated mills, mini-mills employ far fewer people. In developed countries where labor costs are one of the biggest cost items, it is not surprising that mini-mills are the most profitable steel companies. In Russia there is only one "pure" mini-mill, the Oskol Electric Metal Plant, although many other steel mills have EAF assets that complement their other furnaces.

The main Russian plants are integrated mills, which in many ways is their strength, as integrated mills in developed countries have higher costs and are less competitive. Although mini-mills are getting better through technology, steel with demanding specifications can usually only be made at integrated mills, as it is difficult to regulate the alloy metal content in steel made from scrap. Additionally, various large steel product sizes can only be made at integrated mills.

GLOBAL STEEL PRICES

Steel is a cyclical business that fluctuates on the currents of overall economic growth. The main drivers of the sector are construction and machine building, and in general the steel sector is a leading indicator of economic health. At present, global steel prices are on the upswing, having rebounded from the extremely low prices in 2001 that marked the trough of the latest business cycle. However, it is difficult to predict if the current rise in prices will not be short-lived.

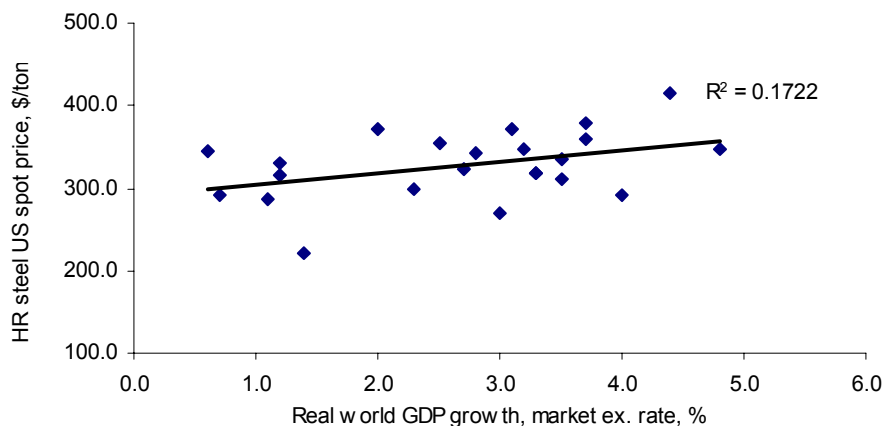
HR steel US spot price, \$/ton: a decent proxy for world prices



Source: Purchasing Magazine

Despite steel being in theory a leading indicator of economic growth, the correlation between global GDP growth and steel price movements over the last 22 years is not tight enough to be a reliable indicator of future price swings. As a result, it appears that world GDP forecasts give little more than a vague idea about where steel prices are heading. Given that global GDP growth for 2003 is forecast at 2.6% (2002 was 1.2%), one would expect the HR steel spot price in the U.S. to be higher than the 2002 average of \$316/ton. However, HR steel prices are currently \$280/ton, which could mean one of two things: (1) prices for 2002-2003 show the disconnect between steel prices and world growth; or (2) as a leading indicator of global GDP growth steel prices peaked in 2002 and we can expect GDP growth to slow in 2004. In both cases it is difficult to see steel prices strengthening much further from current levels.

Some correlation between world economic growth and steel prices, but not much

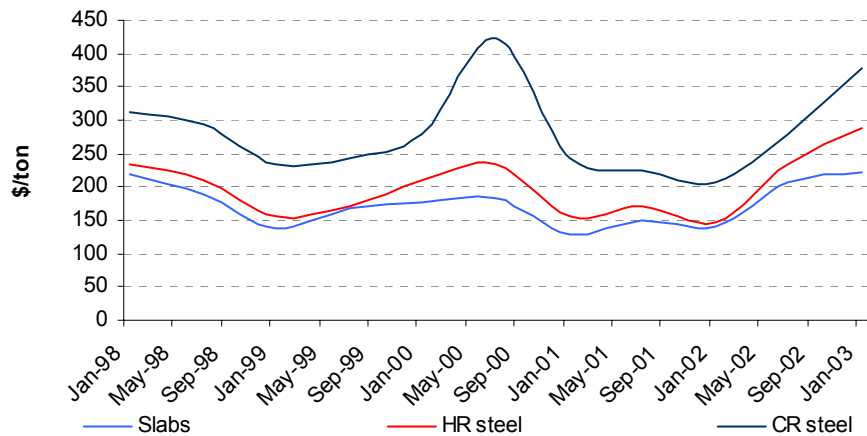


Source: Purchasing Magazine

Russian export prices

Russian steel has two major markets: export, which accounts for 46% of all output, and domestic. Because Russian mills straddle these two markets, there is leeway for the industry to switch between the two to take advantage of two sources of demand. As a result of this, domestic prices are usually about 20% higher than export prices. For Russian steel exports, the price received is basically the importer's market price minus discounts minus the transportation costs.

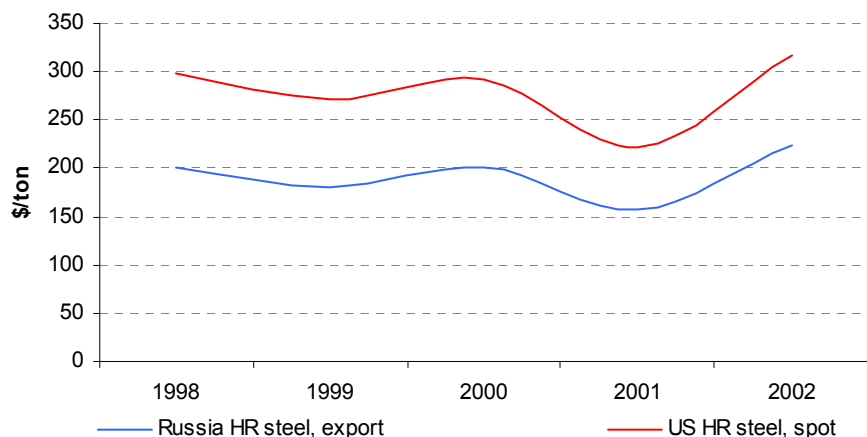
Russian export prices



Source: NLMK

For HR steel, the difference between domestic and export prices is usually substantial – but at the same time export revenue for Russian steel mills is money they would otherwise not have (given finite domestic demand and extra capacity). Additionally, this difference shows that the source of demand and transport costs play a major role in steel pricing. Essentially, the price a customer pays for steel is dependent on the ability of one steel mill to deliver steel cheaper than another, which explains the lack of an observable premium/discount in the Russian market between export and domestic sales.

Russian HR steel exports: difference is transport costs, discount to enter market

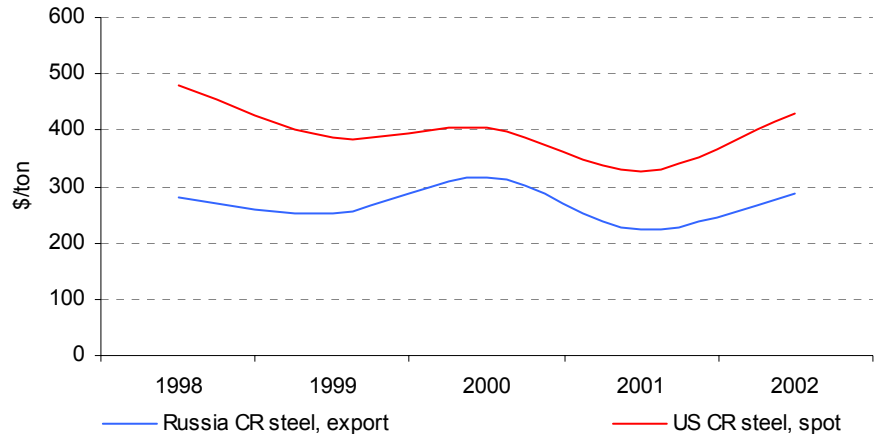


Source: Purchasing Magazine; NLMK

The difference between export and domestic prices, however, is not fully explained by transport costs. If transport costs were the true determining factor, then the difference between export and domestic prices would stay the same in absolute terms for all product categories. Therefore, one would expect the difference between the Russian CR steel price and the U.S. CR steel price to be the same as it is for HR steel. After all, a ton of HR steel and CR steel weigh the same. However, the difference is in fact much higher, at about

\$140 per ton for CR steel. The only explanation is that although there is a clearing price for steel, Russian mills enter markets by undercutting domestic producers sufficiently to make it worth a customer's while to switch to Russian suppliers. Also, in this case the higher value the product the greater the discount needed to entice customers. In fact, the transport cost is probably the same for all types of steel to a particular market, but the price to the customer is dictated by the steel company's ability to offer the cheapest steel.

However, the difference with CR steel is higher: more than transport costs



Source: Purchasing Magazine; NLMK

The two relative price graphs demonstrate why Russian steel has so thoroughly spooked the international market. Russian mills absorb a \$90 difference in HR steel and a \$140 difference in CR steel when exporting to the U.S., or in other words U.S. mills receive 35%-45% more than Russian mills for a similar product delivered to a similar customer; yet Russian steel makers not only absorb the difference, but still rank as the most profitable mills in the world.

THE RUSSIAN STEEL INDUSTRY

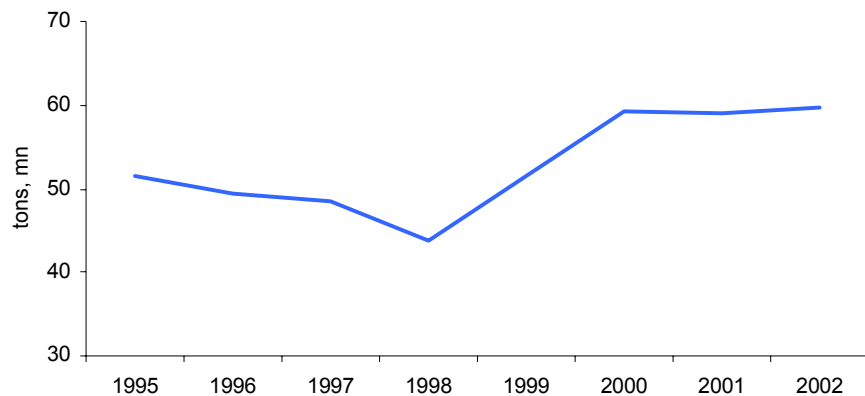
Russian steel is poised to be a long-term survivor in the global steel industry due to its lower labor, energy and raw material costs compared to global peers. Additionally, Russian steel output has the scale that to make it a vital force on the world scene, both big enough for others to depend on, and profitable enough to pose a major threat to other steel makers.

Russian steel is significant

The steel industry is a significant part of the Russia economy. The industry employs 700,000 people or 1% of Russia's total workforce, and represents 8.2% of Russian industrial production (by way of comparison, oil and gas account for 20%). As such, it is a significant part of the Russian economy and a key part of the country's economic revival.

In the international context the Russian steel industry is one of the world's largest, producing 59.7mn tons in 2002, or 7% of the total global production. Of that, 46% is exported while the remaining is consumed domestically. Russia is the world's largest steel exporter and plays a significant role in setting global prices and meeting marginal demand. On the domestic side, the steel industry has benefited from Russia's economic growth, which has increased demand for greater quantities and higher value steel. In fact, domestic steel prices are higher than exports due to the higher transportation costs that impact what steel producers receive on export sales.

Russian steel output; strong recovery after the crisis



Source: Goskomstat

These facts make the Russian steel industry a unique play, as investors can obtain exposure to both the growing Russian economy and to a commodity export business. Until 1998-1999 most investors sought Russian companies that were isolated as much as possible from Russian economy risk – meaning commodity producers with high dollar export revenues. Investors were generally wary of being exposed to Russian consumers, the ruble, and the domestic economy. However, since the 1998 crisis, with the dramatic increase in domestic industry's competitiveness and rising consumption, Russian economy has experienced something of a renaissance. This fact caused investors to take another look at gaining exposure to economy-sensitive sectors they previously sought to avoid.

Export or sell domestically? Company positioning

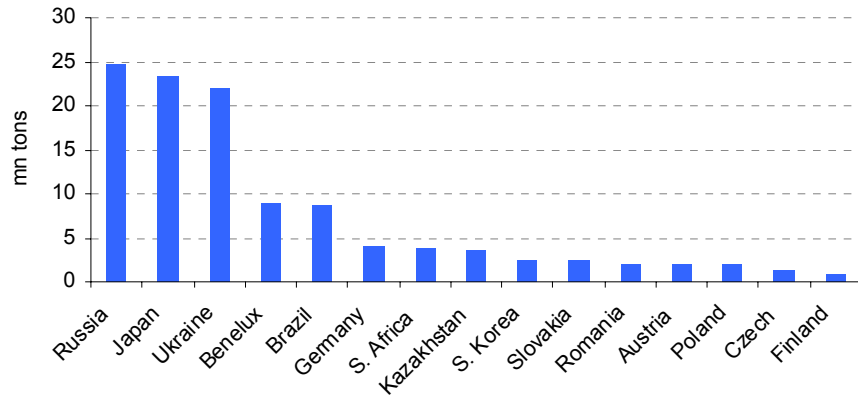
Russian steel producers have the option of selling to both domestic and export markets due to the nature of their product, which is fungible, easily valued, and with large markets, a commodity product in every sense of the word. Indeed, its market dynamics are exactly the opposite of that other Russian commodity: oil. The oil market is characterized by output exceeding domestic demand, but with limitations on export capacity. Generally, this means oil companies try to cram as much oil onto rail cars and into pipelines as possible, while they are forced to sell what they cannot export on the domestic market. Since oil companies produce significantly more than they can export, domestic oil prices are much lower than export prices. With steel, export routes are not bottlenecked and so the situation is the reverse. Steel companies fulfill domestic demand and then export the rest, which partially explains the higher domestic prices for steel. Indeed, the long-term domestic clearing price for steel is essentially the price Russian companies would have to pay for imports. In this case the price to the customer is fixed, meaning whoever has the lower transportation costs receives the most revenue per ton of steel sold. In addition, there are short-term factors that affect the market, such as securing steady supplies, logistics, and meeting surges in demand.

In general, though, geography also plays a significant role in the competitiveness of Russian steel. Companies in the Urals region (between Moscow and Siberia) are at a disadvantage in terms of export profitability compared to competitors closer to the border. The reason for the wide dispersal was that Soviet central planning placed large steel mills strategically to service geographic regions. This means Russian regional economies have an influence on the success of the country's steel mills; moreover the steel mills were originally built to meet the specific regional needs, which have largely remained the same since Soviet times. This sees mills in Western Russia largely equipped to make flat products, used in machine building and engineering, and reflecting the more industrially developed economy of European Russia. The mills in Siberia are configured to supply long products for construction, as they meet the needs of infrastructure and construction development. In the Urals region there are all types of steel mills, factories evacuated during WWII, old mills that trace their history back to Tsarist times, and a developed industrial base that requires many types of steel.

Export: the Russians are coming!

Russian steel producers are major exporters and exert a powerful influence on global prices. The origin of this influence is the fall of the Soviet Union, which saw domestic steel demand plummet and forces producers to look to international markets for sales; the subsequent flow of Russian steel onto the market caused international prices to tank to lows of \$286/ton of HR sheet in 1992 (US spot). In response, countries with domestic steel industries – and overcapacity – introduced either import tariffs or quotas in the 1990s, and by 2002 12 countries (including the US and EU) had import barriers to Russian steel.

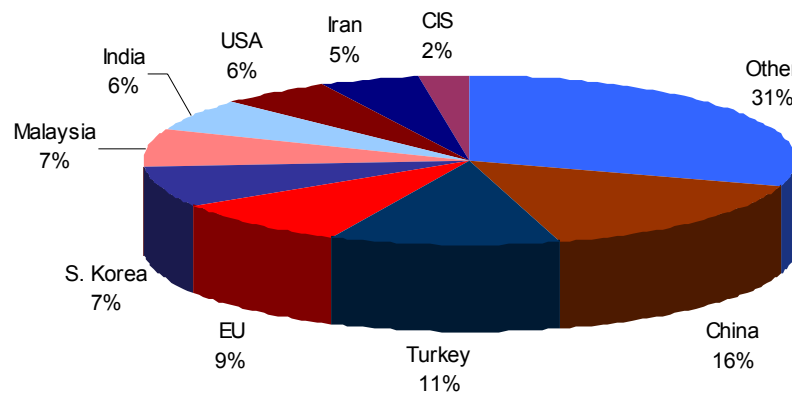
Russian steel: an export powerhouse



Source: 2001 International Iron and Steel Institute, NLMK

Yet as new barriers have been erected Russian steel mills have shown themselves adept at finding other new markets – and this has taken two forms. First, Russian mills shifted away from the US and the EU to Asia – now representing about 40% of exports – to tap burgeoning demand from China and the Asian Tigers. Second, they moved down the value chain in exports, as lower value goods tend to have less harsh restrictions against them compared to higher value goods. As a result, Russian producers now export mainly semi-finished steel, which is further rolled and processed by foreign mills.

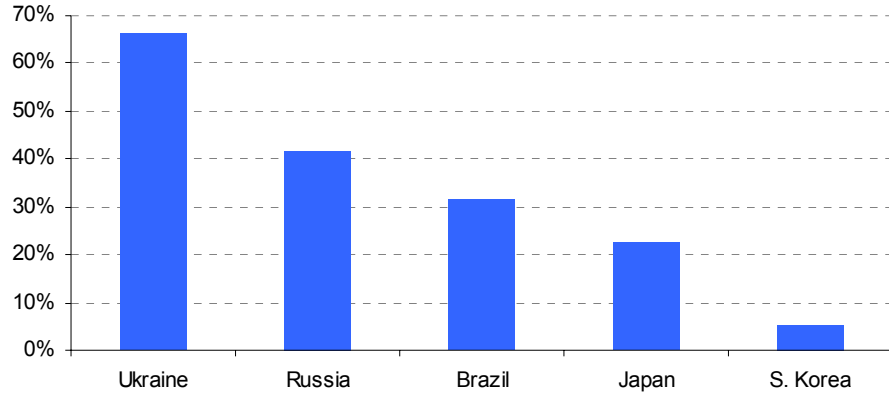
Export markets 2002: Asia predominant



Source: Goskomstat; Multiple media sources; Aton estimates

Russia is the world’s largest steel exporter in absolute terms and, at 46% (41.7% net value), the second largest relative to total domestic production. Putting the second figure into perspective, South Korea is the fifth largest net exporter as a percentage of production, at 5.5%. This implies that most countries steel production is domestically-oriented, which helps explain the ill-will of many countries toward Russian steel. It also means that the financial health of Russian steel mills is closely tied with foreign markets, although domestic growth has relieved some of this dependence.

Net exports as % of total production: Russian mills need export markets

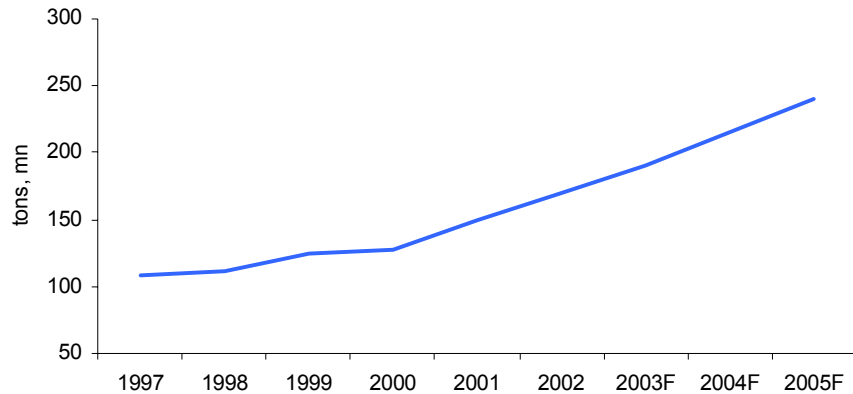


Source: US Geological Survey; International Iron and Steel Institute

The China syndrome

Russian steel producers have a special relationship with China in that the country represents their single largest market. Moreover, for Ural and Siberian mills, China is the most lucrative market due to its geographic proximity. China imports about 20mn tons of steel per annum, with Russia meeting about 25% of that demand; however China, as a command economy, has embarked on an import substitution drive that could have serious consequences for Russian mills in the medium term. China’s current steel output is 170mn tons, and is expected to grow to 240mn tons by 2005, a CAGR of 12.2%. Although the Chinese economy is growing at 7%-9% per annum, the rapid rise in steel output means Russian mills will need to look for new markets or sell more steel domestically in future.

.....growing problem: China’s steel production



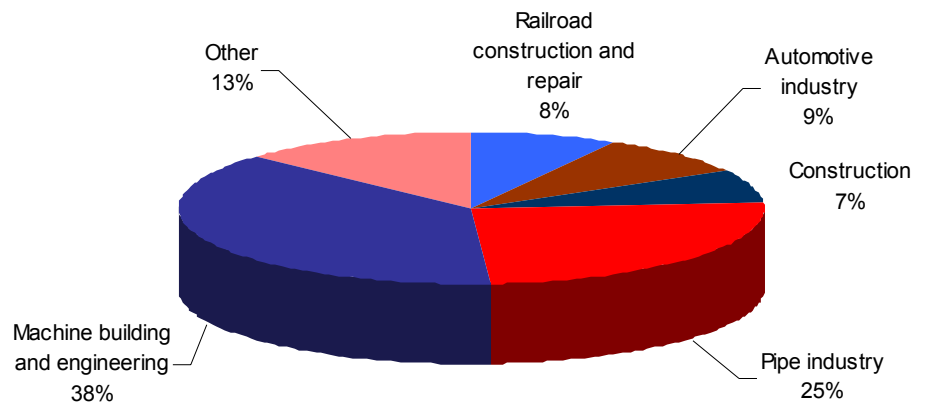
Source: US Geological Survey; Interfax

At least Russian producers do not need to fear Chinese competition on the international market. Although Chinese steel workers’ wages are lower than Russian steel workers’, China’s poor efficiency means actual labor costs are higher; moreover electricity is three-times more expensive and iron ore about 20% more in China, and gas in Russia is also much cheaper. Therefore, Russian steel mills will continue to enjoy a significant price advantage over their Chinese counterparts if the latter try to sell on the international market, meaning China is a limited threat to Russia’s global steel position.

The domestic market

Russian industry bought about 26mn tons of steel in 2002, 2.7mn tons of which was imported. The main industries that use steel are machine building, engineering and automotive, with companies like Avtovaz, Gaz and Kamaz representing anywhere from 10% to 25% of total domestic sales for the big three steel makers. The other major customers are the pipe plants, such as Chelyabinsk Pipe and Vyksa Pipe. The wide diameter pipe producers buy sheet products, which they then roll into various pipe forms. Pipe demand is particularly strong at present due to oil and gas drilling and infrastructure projects: for example, 1H03 output was up 45% at Chelyabinsk Pipe and 30% at Vyksa Pipe.

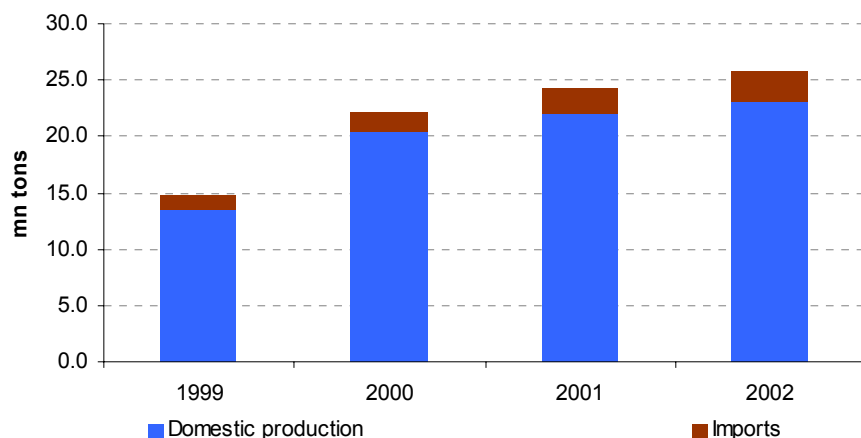
Domestic consumption breakdown



Source: Encyclopedia Marketing

An additional source of growing demand is the construction industry. After a long dry spell in the early- to mid-1990s, domestic economic growth has led to a construction boom in major Russian cities. In addition, the Railway Ministry has also aggressively stepped up its investment plans to compensate for past infrastructure neglect, also increasing demand.

Russian steel consumption rising



Source: Goskomstat; State Customs; Aton estimates

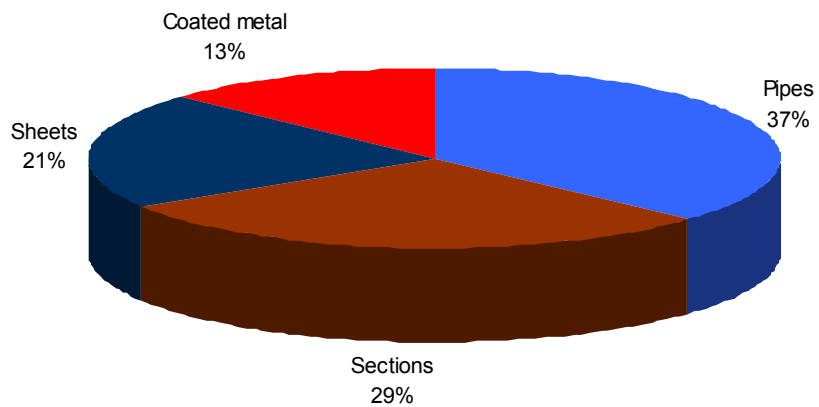
Russian steel commands a premium on the domestic market. The actual cost of steel to a Russian customer is likely similar to that paid by industry in other countries; however, Russian steel mills receive even more on a domestic sale due to lower transport costs (it obviously costs less to ship steel a short distance at home than a long distance abroad). Moreover, production operations and logistics play a role in higher domestic prices, as local industry is willing (forced) to pay more if it knows there will be no supply disruptions. Unfortunately there is no observable domestic/export premium as the premium is

determined on a case-by-case basis by the transport costs to the buyer from competing steel mills. In general, though, the domestic premium is as much as 30% for products such as HR and CR sheets.

Imports to Russia and their substitution

Russian industry cannot use imports to drive down local producers' prices as transport costs make foreign products expensive. As a result, steel imports are small and limited to specialty products either not made domestically or not made in sufficient quantities. The most obvious example is wide-diameter pipe, which is regularly bought from Ukraine and Germany as domestic producers Vyksa Pipe, Chelyabinsk Pipe and Volzhsky Pipe cannot meet demand – producing 700,000 tons in 2002 against a total 920,000 purchased by Russian companies. However, a number of companies are seeking to move into this import substitution niche, with Severstal recently announcing a JV with NTMK to have wide sheet produced at the latter rolled at Severstal's Izhora Pipe facility. The \$130mn project is due to be completed by 2005 and will produce 450,000 tons of pipe annually, which would put it at about half the size of Vyksa's output.

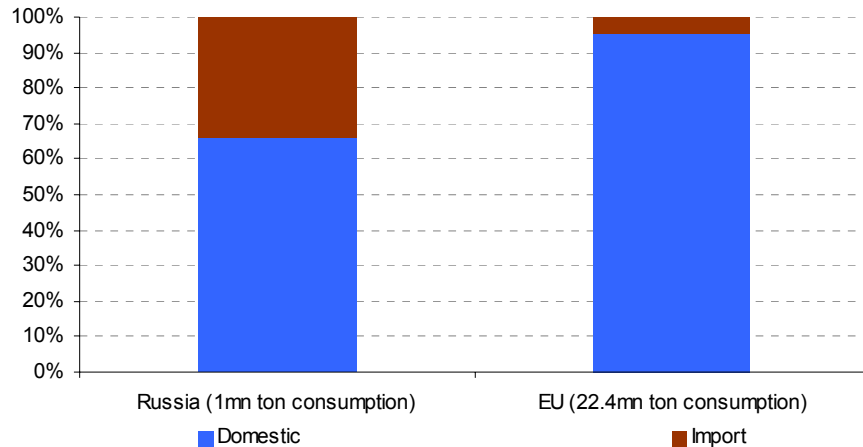
Russian steel imports breakdown



Source: SIORA

Another product area where Russian steel mills are seeking to replace imports is galvanized steel, widely used in construction and in the automotive industry due to its corrosion resistance. The biggest project to date is a JV between Arcelor and Severstal to make 400,000 tons of galvanized steel per annum. This JV is targeted directly toward Russia's auto industry, which on average uses just 4% galvanized steel used in its cars, compared to more than 60% by Western European manufacturers.

Galvanized steel: room for Russians to expand in the domestic market



Source: Eurostat; GTK Russia; NLMK

How is steel sold?

Export sales are usually facilitated through the trading arm of a company, although the beneficiary owners of the trading arm are almost always company management. Again, this structure resembles that of other Russian commodity/export companies (think Sibneft and Runicom). In a company like Severstal these subsidiaries function mainly as facilitators, with most of the wealth accruing at the parent company level. With some companies, such as Evrazholding, the export-trading arm is the key value-concentration point, which leaves the production facilities of NTMK and ZSMK low on stored value from operations. In addition, in the steel industry domestic sales are usually run through a trading subsidiary, though in many cases the value of these trades accrues at the main company level, at least under IAS or GAAP accounting. However, in most cases the existence of both domestic and export trading arms means that RAS accounts understate sales and net income, since there is no consolidation under RAS accounting.

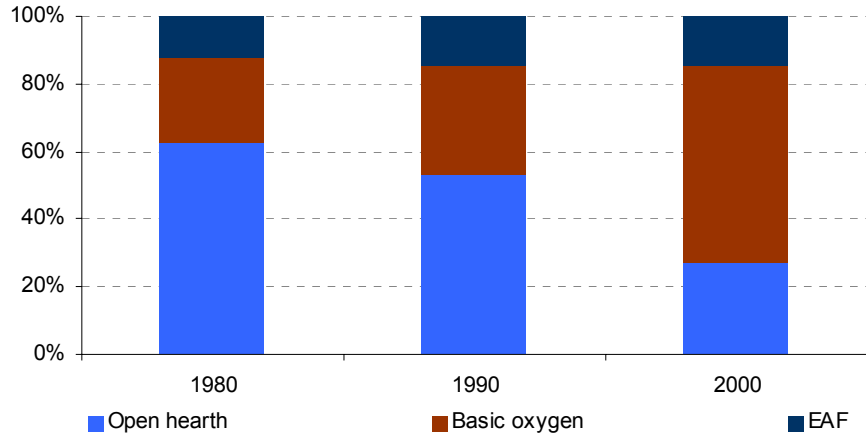
The asset base and production technology

Russian mills are generally not as technologically advanced as their developed market peers. However, most mills are in the latter stages of large capex programs, meaning the asset quality at the majority of Russian steel companies is rapidly improving.

Furnace technology

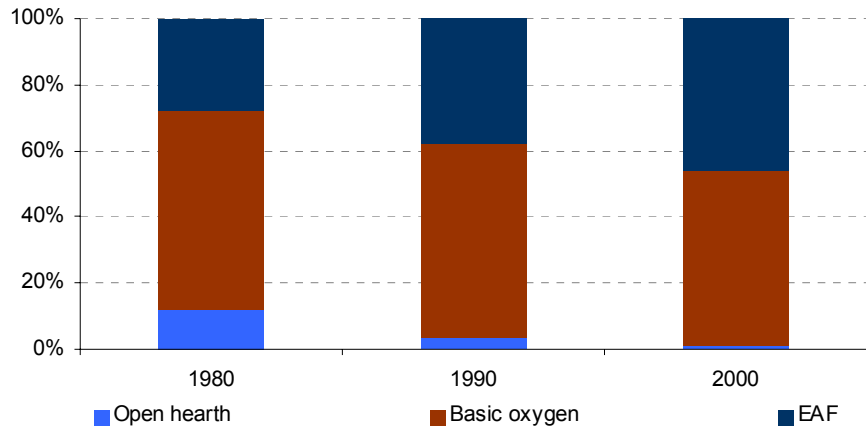
One of the main indicators of asset modernity is the type of furnace used. Outdated open-hearth furnace technology, which represents 27% of total output in Russia, is gradually being replaced by oxygen converters and EAF. Having said that, there is no reason to expect a dramatic shift in the type of furnace technology used industry-wide: First, because many of the steel mills that use out-dated technology are operated under an asset harvest strategy, meaning the open-hearth furnaces at smaller mills will be used until they fall apart; and given the entire plant of such a mill would need to be completely overhauled (at great cost) and the mill was likely acquired on the cheap, such a strategy makes economic sense; and second, with labor costs so low in Russia the main benefit of EAF and the mini-mill business model, low labor input, is largely negated.

Russian furnace technology: open-hearth still significant



Source: Goskomstat

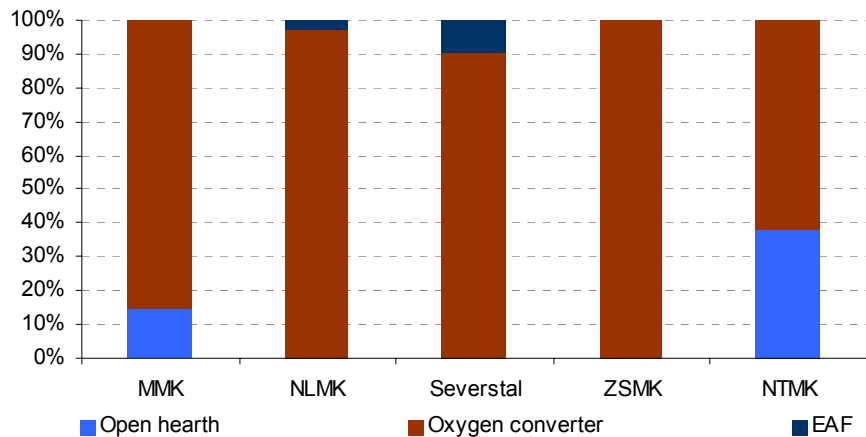
...and for comparison, U.S. furnace technology



Source: US Geological Survey

The top five mills in Russia, with the exception of NTMK, are more technologically advanced in their steel making capability than the Russian average. This is mainly due to high capex programs that have put a priority on furnace modernization over the past few years.

Top 5 Russian mills: not bad relative to the rest of Russia



Source: Company data

By 2005 all of the open-hearth capacity at the top mills should be closed and replaced with oxygen converter furnaces.

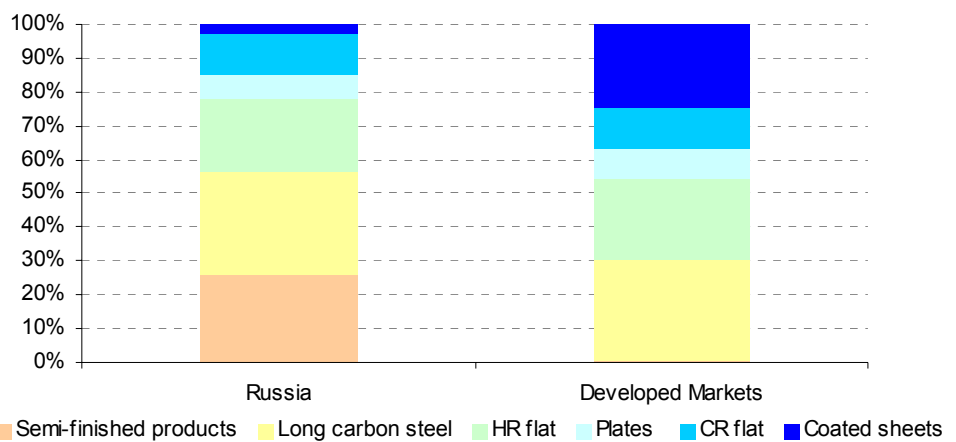
Rolling and finishing technology

In addition to making steel, technology is also needed to roll it. Here too, Russia differs from its more developed colleagues in terms of the sophistication. The most telling point is the percentage of semi-finished products in total Russian production, which at 26% compares unfavorably to the 0.4% in developed markets. However, there is one caveat: semi-finished steel is eventually “finished,” since there is no straight commercial use for slab or billet. Therefore, this statistic can be partially explained by the large (46%) portion of semi-finished products in total Russian steel exports. Russia essentially supplies the world with semi-finished steel, which then turns it into higher value products.

However, there is also a difference between value added and quality. Although Russia makes relatively low value steel, the quality in most cases is at international standards. Russian steel at most mills is certified in major markets to meet their quality requirements. This, combined with the fact that steel products are usually standardized, means Russian steel exports can compete with other countries’ in terms of product offerings, making price the key criteria for customer purchases.

On the domestic front, there are key steel products local industry imports that represent opportunities for Russian steel mills. In this regard, the asset base of some mills is being modernized with new coating equipment to, for example, supply the domestic machine building and automotive industries with corrosion-resistant steel. However, this type of modernization is usually being done at the largest mills that have the financial resources to make the investment and the ability to be a reliable supplier to future customers.

Russian steel output by product type; high proportion of low value products



Source: Alfa Bank

There is one final point to be made about the asset quality of Russian steel mills. Unlike developed markets, in Russia, the lower a company is on the value-added chain the better its margins, and therefore the seemingly low value output of Russian mills is deceiving. The best example is NLMK, which had a net margin of 19.5% in 2002, while a high 26% of its revenues came from semi-finished slab. In contrast, Severstal received 4% of its revenues from semi-finished slab in 2002 while its net margin was 9%. It is true that over the past couple of years Russian steel mills have invested heavily in capex, although the bulk of that investment was to make up for the years of under investment in Soviet times, and so was more maintenance in character than modernization. However, with low raw material and labor costs, big markets for low value goods, and highly price-competitive steel, there are limits to the desire of Russian mills to push for asset modernization. Instead, steel companies are replacing assets that should have been replaced long ago, while making targeted investments in new equipment to fill out gaps in product offerings, such as galvanized sheet or wide sheets for pipe rolling.

Capex will be high, but only for the next two to three years

Capital expenditures, \$mn	2001	2002	2003 F	2004 F	2005 F	2006 F
Evrzholding	39	56	136	150	150	120
NLMK	141	154	215	225	230	150
MMK	287	204	180	180	100	145
Severstal	97	198	363*	190	140	100

* Increase from originally planned \$247mn at beginning of year

Source: Company data; Aton estimates

International comparisons

The Russian steel industry is by far the most profitable in the world. Granted, many of the country's smaller mills outside of the top nine are not star performers, but taken as a whole the bigger mills, representing more than 70% of output, are a force to be reckoned with.

Russian mills: a different profile

Russian mills operate differently to their international peers in that they have high exposure to export sales and concentrate primarily on lower value products relative to others. We have already outlined the significance of export markets, but the second point of revenue per ton highlights how Russian mills are unique. For our profiled Russian steel companies, the range of revenue per ton is \$198 to \$232. This is about the same as the price of export HR sheet. HR sheet is not a particularly high value product, being just one step above slab. In comparison, if we exclude outliers in our international steel company universe, the average revenue per ton is \$433/ton to \$682/ton, or two to three times higher than for our Russian companies. Yet despite these higher revenues, most mills outside Russia are struggling financially. Indeed, the international mills with the lowest revenue per ton, POSCO, Nucor and Gerdau, have the highest net margins, ROA and ROE. Also, these three mills either significantly or exclusively use EAF technology, which would seem to be the only technology that makes steel production in developed countries profitable (Gerdau, a Brazilian company, makes 36% of its steel in the U.S. and Canada).

International performance comparison: Russian steel is best

2002 results	Gross profit margin	EBITDA margin	Net income margin	ROA	ROE	Cash/assets	Net debt/equity	Revenue per ton, \$	EBITDA per ton, \$	Net income per ton, \$
Posco	21.02%	23.23%	7.09%	5.34%	9.02%	1.40%	42.80%	433	101	31
US Steel	11.21%	6.78%	0.86%	0.76%	3.01%	3.05%	58.76%	443	30	4
Nucor	9.78%	11.19%	3.38%	3.70%	6.98%	5.00%	29.08%	353	39	12
Gerdau	28.03%	23.27%	7.10%	5.67%	26.80%	0.99%	238.10%	347	81	25
Corus Group	3.66%	-4.31%	-5.54%	-6.19%	-14.62%	3.58%	46.88%	682	-29	-38
Thyssen Krupp	17.65%	7.39%	0.59%	0.69%	2.61%	2.96%	81.38%	2284	169	13
Arcelor	52.96%	7.80%	-0.76%	-0.72%	-2.76%	4.80%	67.48%	558	44	-4
Rautaruukki	-2.69%	12.97%	-3.38%	-1.72%	-5.51%	2.23%	136.55%	509	66	-17
Nippon Steel	13.02%	10.34%	-1.10%	-0.70%	-3.13%	1.84%	214.07%	668	69	-7
Average, Int'l	17.18%	10.96%	0.92%	0.76%	2.49%	2.87%	101.68%			
MMK	26.59%	22.52%	5.57%	4.02%	6.36%	7.77%	8.25%	215	48	12
Severstal	26.82%	24.78%	9.06%	6.06%	7.85%	4.49%	0.71%	232	53	21
NLMK	35.92%	35.28%	19.74%	15.29%	16.98%	17.65%	-19.14%	198	66	39
Evrzholding	23.84%	19.86%	11.39%	16.26%	53.29%	1.11%	93.88%	212	39	24
Average, Russia	28.29%	25.61%	11.44%	10.41%	21.12%	7.75%	20.92%			

* for Int'l companies tonnage is output, for Russian companies tonnage is volume sold

Source: Company data; Aton estimates

The significance of this is that, either by choice or historical accident, Russian mills have a winning business model. Additionally, it would seem that the managers of Russian mills are aware of this and are not planning to repeat the mistakes of their developed country peers by rushing headlong into very high value steel production.

Cash for the bad times

Russian steel companies have been accumulating cash on their balance sheets since 2001. Although this is due to the upswing in steel prices that have been filling company coffers, it would seem that steel managers are keeping a safety pile for the inevitable downturn in steel prices. The average cash to assets ratio for Russian mills is 7.75%, much higher than our international average of 2.87%.

Saving for a rainy day

Cash balance, \$mn	2001	2002
Evrzholding	8	16
NLMK	190	390
MMK	77	222
Severstal	101	188

Source: Company data

Evrzholding has a relatively low cash balance due to the abnormally high dividend payout through one of its steel traders. Dividend payouts at Evrazholding were \$45mn in 2001 and \$197mn in 2002.

We estimate steel companies are likely to keep at least \$100mn on their balance sheet at all times, which covers anywhere from three to five weeks of operations.

Product positioning for Russia's steel mills

Russian steel makers face a dilemma about how to position themselves in the market in terms of product offerings. Of course, the type of equipment determines the type of steel that can be made; however, leaving aside that argument, we see that the major strategic issue for Russian steel makers in the production mix between semi-finished and finished steel products. Semi-finished products are the building blocks for all types of steel. Slabs are used to make sheets and coils, while billets are used to make long products. For example, Russian pipe makers buy strips from steel mills, which they then roll into pipe of various sizes. To further extend the example, a ton of steel strip costs an average \$280 domestically, whereas a ton of wide diameter pipe costs \$730. This huge leap in value is certainly attractive to Russian steel mills, as at first glance it seems the higher up the value-added chain you go, the more profit opportunities there are. However, some steel producers feel the equation is more complicated. First, selling lower value products is easier since there is less specialization, meaning there is a wider pool of customers that are easier to satisfy. In contrast, the further you move up the value added chain in steel the lower the potential customers, which leads to less business predictability. The swings of production output at Russia's two biggest pipe plants are a case in point.

Pipe plant output: nice when it goes up, but will it stay there?

	2000	2001	2002	2003F
Vyksa Pipe				
Output, tons	762,000	823,000	742,900	965,770
Y-o-Y %	119.1%	8.0%	-9.7%	30.0%
Chelyabinsk Pipe				
Output, tons	629,000	683,600	590,800	827,120
Y-o-Y %	36.9%	8.7%	-13.6%	40.0%

Source: Company data; Aton estimates

Second, the required know-how and up-front capital costs mean value added steel projects are not a sure endeavor. Russian steel mills have looked at the experience in the West, where attempts to move up the value added chain, particularly through acquisitions, have failed. As a result, there appears to be a general go-slow approach in Russia, which is limited largely to steel with zinc (galvanized) or polymer coating. The main exception to

this is Severstal’s JV with NTMK to make wide diameter pipe. However, the demand for pipe products and galvanized steel in Russia is huge and growing and there are clear economic incentives to substituting Ukrainian and German imports. Finally, using the pipe makers as an example, even though moving up the value-added chain is seems appealing, the companies that are already there are less profitable than steel mills that stick with lower value products. Of course part of this is due to the ability to drain profit away from the pipe makers by charging high prices for the steel strip used to make pipe; given it is uneconomic for pipe producers to import steel inputs, the domestic mills are able to squeeze pipe plant margins.

Companies making value-added products do not make the most profit

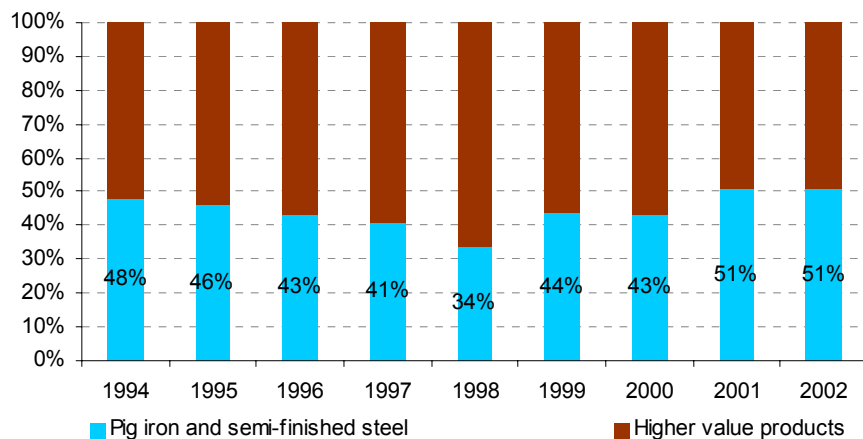
	Net margin, 2002
Russia companies	
Chelyabinsk Pipe, IAS	0.5%
Vyksa Pipe, RAS	4.8%
Magnitogorsk, IAS	5.6%
Severstal, IAS	9.0%
Evrazholding, IAS	10.6%
Novolipetsk, GAAP	19.5%
International comparisons	
Low revenue per ton	
Gerdau	7.10%
Posco	7.09%
Nucor	3.38%
High revenue per ton	
Corus Group	-5.54%
Rautaruukki	-3.38%
Arcelor	-0.76%
Thyssen Krupp	0.59%
US Steel	0.86%

Source: Company data; Aton estimates

Import tariffs play a role in product offering

The question of what to produce is also influenced by the import tariffs countries have erected against Russian producers. Most tariffs force Russian mills to export their lowest value products (semi-finished slabs and billets) by closing off markets to higher value goods. Therefore, the efforts of Russian steel mills to shift production to higher value products is largely constrained by the overall condition of Russian industry, which is the only stable markets for such products.

Composition of exports: after 1998 serious barriers to higher value Russian steel



Source: NLMK

At the end of 2002, 12 countries and the EU had imposed specific measures against Russian steel imports – yet ironically, some of these countries are also Russia’s largest steel export

markets. In the case of the U.S., section 201 trade relief was introduced in 2002, which set various quotas and tariffs to steel imports. However, the importing of semi-finished steel was only lightly regulated, suggesting the U.S. steel industry is not so much against imports in general, only to high value imports.

Anti-Russian steel tariffs and/or quotas enacted since 2000

Argentina	Egypt	Mexico	USA
Bulgaria	EU	Philippines	Venezuela
Canada	Hungary	Poland	
China	India	Turkey	
Colombia	Iran	Ukraine	

Source: NLMK

Russian steel M&A: moving down, not up, the value added chain

It also seems that Russian mills are wary of acquiring companies that would move them up the value added chain: First, there are associated social costs and political issues that make acquisitions expensive; and second, in most cases it is easier for steel mills to build new facilities than to acquire existing ones. The main reasons for this is that Soviet planning placed rolling and finishing mills across the USSR to facilitate employment, disperse population centers and service local industry. This same planning made almost all rolling facilities as self-sufficient as possible, with some steel making capability, support functions, and infrastructure. At first glance one might think there are opportunities for redundancies to achieve acquisition synergies. However, in the steel industry, the high concentration of operations at one site means there are few synergies to be had. For example, if a steel mill acquired a pipe plant 1000km away, only general administrative functions could be shared. All other operations would run as they had pre-acquisition, with the same costs. The only real question would be whether to concentrate the profit from the value-added products at the mother company level – and so far, steel mills with deep pockets have not seen the economic benefit of buying a pipe plant, for example, to achieve this value over and above the acquisition price. Only in cases of gross mismanagement or dispersed/ineffective ownership have the major steel mills been compelled to move. And move they have, but in backward integration to acquire their raw material suppliers.

THE FIRST STEP: RAW MATERIALS

Steel is a commodity product but it is not a direct play on natural resources. Steel itself is actually a highly processed product that is the result of multiple steps which transform the raw material inputs, such as iron ore, coking coal and others, into steel.

What steel mills need

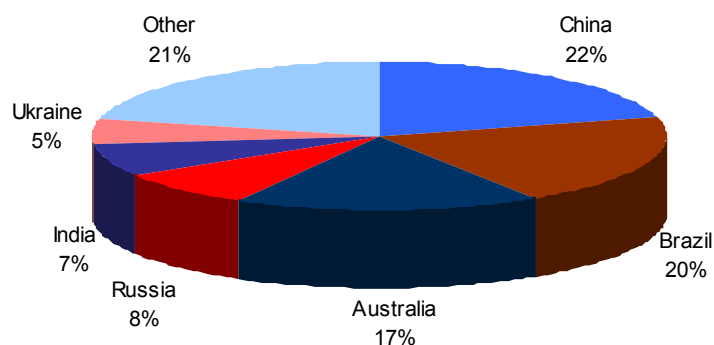
The main ingredients for steel making are iron ore, coal, nickel, chromium and other alloying metals. However, while nickel and other alloying metals are easy to buy on the open market and transport is not an issue due to relatively small quantities required, the purchase of coal and iron ore is a major issue for Russia’s largest steel mills. There are several reasons for this.

- **Geography:** both coal and iron ore are used in massive quantities that require considerable logistical support to get from the mine to steel mill. Also, as a basic raw material, the value-to-volume ratio is very low. These facts mean that a steel mill’s location vis-à-vis raw material suppliers (and the associated transportation costs) plays a significant role in the operations and profitability of a steel plant.
- **Fungibility:** not all iron ore is the same, and in many cases steel plants were built next to iron ore deposits for the sole purpose of exploiting the deposit. Such is the case with NTMK, adjacent to Kachkanarsky GOK. Kachkanarsky GOK mines an ore that is very rich in vanadium, used to make iron at specially modified blast furnaces at NTMK. However, while NTMK can use other iron ores in its blast furnaces, other steel mills have difficulty using Kachkanarsky ore, thus making NTMK the only natural customer. Coking coal used to make steel, on the other hand, is the same for everyone, so there are no supplier-specific issues.

Iron ore: a scramble to secure supply

Iron ore is the key input to steel production and, on a chemical basis, accounts for more than 90% of steel’s mass; in fact iron ore is the natural resource play, with a steel mill better understood as a processor. To make the analogy, iron ore is to steel mills what crude is to oil refineries.

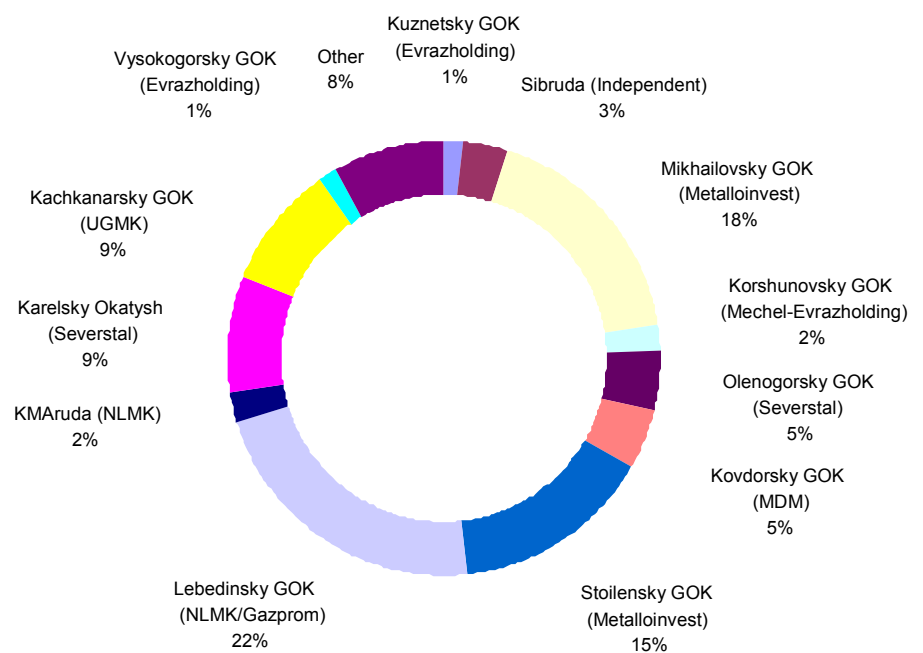
World 2002 iron ore output: Russia is one of the largest producers



Source: US Geological Survey

Iron ore is mined all over the world, although Russia is a major producer and a major exporter – exporting about 11.7mn tons of iron ore in 2002 (1% total world output). Iron ore is cheaper in Russia than in other markets, giving it a competitive advantage in export markets and giving Russian steel mills yet another lower-cost input that is part of the industry’s above-normal profitability. Iron ore from Russia’s major mines is about \$16/ton before transport costs and about \$23/ton after, while in the U.S. iron ore is an average \$24/ton and about \$30/ton in China. Brazil and Australia are the world’s major low-cost iron ore exporters, but transportation costs make it uncompetitive for Russian mills to buy this ore (Australian iron ore would cost Russian mills about \$35/ton). This does, however, imply that iron ore costs are set to rise to eliminate the difference between the \$23/ton price to factory for Russian ore and the equivalent \$35/ton for imported ores. However, with backward integration, steel mills can slow the rise in iron ore prices to themselves.

Relative Russian iron ore production, 2002



Source: Metallinfo

The iron ore market’s fortunes are closely tied to Russia’s steel makers. The largest iron ore deposit is the Kursk Magnetic Anomaly (KMA), located in western Russia in the Belgorod and Kursk regions. This rich deposit has 40%-50% iron ore content, which requires minimal enriching to be commercially viable. The KMA contains about 40% of Russia’s total iron ore reserves and the companies operating the mine – the major ones being Mikhailovsky GOK and Lebedinsky GOK – produce about 45% of Russia’s iron ore output. Because of their size and the rich ore, these companies can supply practically any steel mill in Russia, even in far away Siberia, at competitive prices. The smaller ore mines tend to supply mainly to a single steel mill, as was the original intent under Soviet planning. This is why backward integration is so important, as steel mill owners/managers feel they need to control their suppliers to pre-empt unfriendly owners having influence at the steel mill. Additionally, by controlling iron ore mines that are geographically close, steel mills can save on rail transport costs, which play a significant role in the economics of total iron ore costs.

An ongoing case highlighting this issue is the battle between Mechel and Evrazholding (ZSMK) for the Korshunovsky GOK. Korshunovsky GOK is located in Irkutsk oblast and

was originally slated to supply ore to the Zapadno-Sibirsky Steel Plant (ZSMK) in Kemerovo. Because of the relatively close proximity of the iron ore supplier (1,000km), and its location in the heart of Russia's coal country, ZSMK had probably the lowest cost steel of any major producer, at \$95/ton of raw steel (due to very low total transport costs). Mechel, on the other hand, is located in Chelyabinsk, almost three times further away (2900km) than ZSMK. From an operational point of view there seems to be little compelling Mechel to want Korshunovsky; however, given most of the valuable metal assets have fallen to one group or another, the hapless Korshunovsky GOK was in play and Mechel seems to have decided to go after it, though it is not clear what the end game is in this play by Mechel. In the extreme case, Mechel might be able to force ZSMK into its group, although currently ZSMK is able to purchase iron ore from Mikhailovsky GOK in Belgorod (4,000km away) at competitive prices, thus replacing its historical supplier. Most likely, Mechel is simply trying to acquire a cheap asset, and ZSMK just happens to be in the way. However, now that ZSMK is buying iron ore from Mikhailovsky GOK and not Korshunovsky GOK, according to our calculations transport costs have gone up more than 300%.

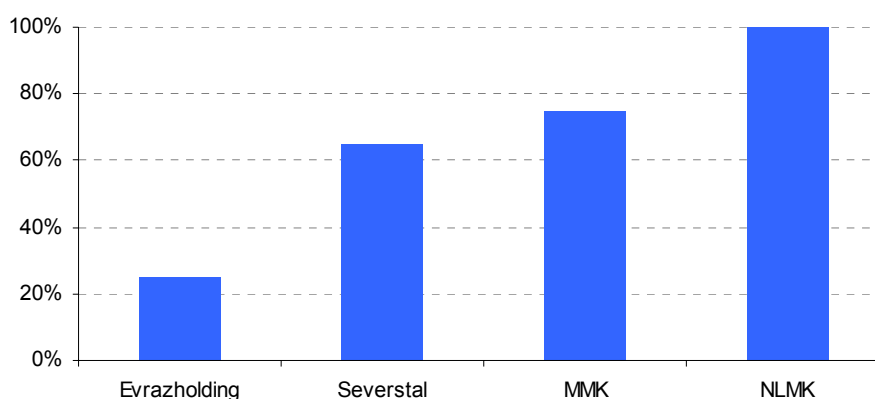
Iron ore output highly concentrated among three major mines

Company	2002 output, t	% of total
Lebedinsky GOK (NLMK/Gazprom)	18,375	21.8%
Mikhailovsky GOK (Metalloinvest)	15,133	18.0%
Stoilensky GOK (Metalloinvest)	12,620	15.0%
Kachkanarsky GOK (UGMK)	7,784	9.2%
Karelsky Okatysh (Severstal)	7,348	8.7%
Kovdorsky GOK (MDM)	3,829	4.5%
Olenogorsky GOK (Severstal)	3,815	4.5%
Sibruda (Independent)	2,748	3.3%
KMAruda (NLMK)	1,791	2.1%
Korshunovsky GOK (Mechel-Evrazholding)	1,436	1.7%
Vysokogorsky GOK (Evrazholding)	1,224	1.5%
Kuznetsky GOK (Evrazholding)	1,169	1.4%
Other	6,905	8.2%
Total Russian output	84,177	100%

Source: Various media sources; Aton estimates

Other steel plants were more aggressive earlier in securing raw materials. Severstal controls through associated entities the Karelsky Okatysh and Olenogorsky GOK iron ore mines, which supply 65% of its needs. NLMK is so close to the KMA that it has little problem securing 100% of its supply needs from either KMAruda (controlled), the friendly (12% owned) Lebedinsky GOK or the independent Mikhailovsky GOK, the last two, as noted, being the largest ore mines in Russia. MMK receives about 60% of its iron ore from Sokolovsko-Sarbaiskoye GOPO (Kazakhstan, ticker: SSGP on the KASE exchange). Sokolovsko-Sarbaiskoye is independent, although its natural customers are steel factories in the South Urals area and MKK represents 99% of all its sales to Russia.

Percent of iron ore supply secured directly or indirectly



Source: Company data; Aton estimates

However, as noted, most of the asset consolidation in iron ore mining has already taken place. Smaller steel plants that produce less than 2mn tons a year are able to buy iron ore on the open market from competing ore mines. Bigger plants, as outlined above, need to secure large, steady supplies, and require some form of backward integration, or at least very good relationships with independent ore producers. Of the four major steel groups, Evrazholding is the most exposed in this regard, with only 25% of its iron ore needs provided by either controlled or captive/friendly companies. However, with the major mine Mikhailovsky GOK independent, plus several smaller regional mines able to fulfill supply, the key issue driving acquisition plans is ore cost rather than availability.

Fairly consistent quality among Russian iron ore mines

1995 Operating Statistics	Concentrate quality, % iron content
Lebedinsky GOK	68.47%
Stoilensky GOK	67.20%
Mikhailovsky GOK	65.90%
KMARuda	66.06%
Olenogorsky GOK	65.78%
Kovdorsky GOK	64.15%
Kachkanarsky GOK	61.61%
Korshunovsky GOK	62.70%
Russian average	63.45%

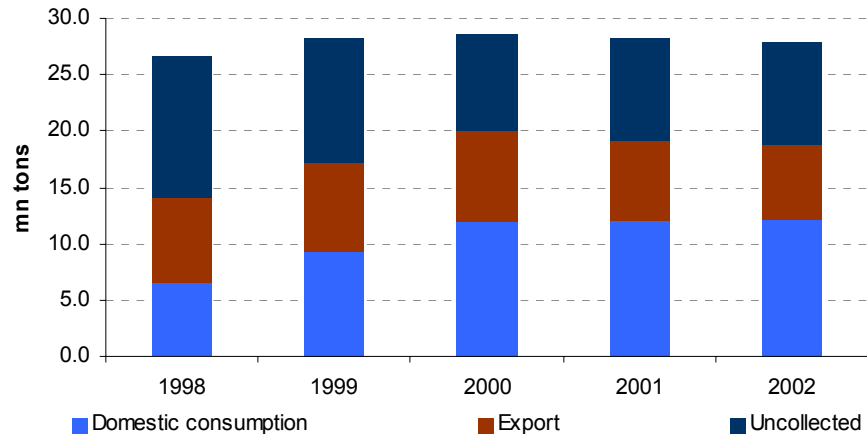
Source: V.A.Chanturia; RAN Moscow

When iron ore is first mined its ore content is usually not high enough to make it commercially viable, meaning it needs to be enriched, involving the removal of associated materials in the iron ore. In Russia, the content in enriched iron ore has risen slightly as new technologies and better operations have been implemented. In 1990 the average Russian iron content in enriched ore was 62.04%, by 1995 it was up to 63.45%, and we estimate that it is 65% today.

Don't scrap that scrap!

In addition to iron ore, many steel companies use steel scrap. Scrap is sourced domestically and either sold to steel makers or exported – of the 20mn tons of scrap produced annually, 12mn tons is sold domestically and 8mn tons sold abroad. Before 1991, Russia produced 30mn tons of scrap per annum, all of it consumed domestically; yet today it is one of the world's largest exporters. Scrap sourcing is very inefficient and about 9mn tons of potential scrap is not collected each year. Nonetheless scrap is vital to the operations of steel mills operating EAF and so there is a steady market for it. Scrap is easier to melt and re-cast than pig iron, and the electricity hungry EAF furnaces need short melting periods to make them economically viable. Additionally, integrated mills use scrap to supplement their use of pig iron.

Russian scrap dynamics: lots of potential not being collected and used



Source: MAIR; Aton estimates

Despite the advantages of using scrap, there are quality limits to it compared to steel made from “scratch,” as it is more difficult to regulate the content of alloy elements in scrap-made steel.

The scrap business in Russia is very opaque, with the market leader a company called MAIR, which processes more than 4mn tons of steel scrap per annum. The sources of scrap include discarded automobiles, military equipment, ships, and factory equipment. The price of scrap ranges from \$75 to \$100 per ton, although there are large deviations from this range due to the lack of scrap fungibility.

Summary

As a reality check, we composed the following table to determine how our information on key raw material inputs fits together. Although some statistics vary between sources, the general picture appears to hold: about 80% of steel production is done with iron ore and the remainder with scrap. This also fits with the industry’s asset mix. EAF, which accounted for 15% of steel production in 2002, uses almost exclusively scrap, while scrap is occasionally used in other furnace types.

Iron ore and scrap dynamics and their relationship to steel production, 2002

Iron ore output, mn tons	84.2
Iron ore exported, mn tons	11.7
Domestic iron ore consumption, mn tons	72.5
<i>Average iron content</i>	65%
Equivalent in steel production, mn tons	47.1
Total steel output, 2002 mn tons	59.7
Shortfall, mn tons	12.6
Scrap consumed domestically, mn tons	12.0
<i>Net shortfall</i>	0.6

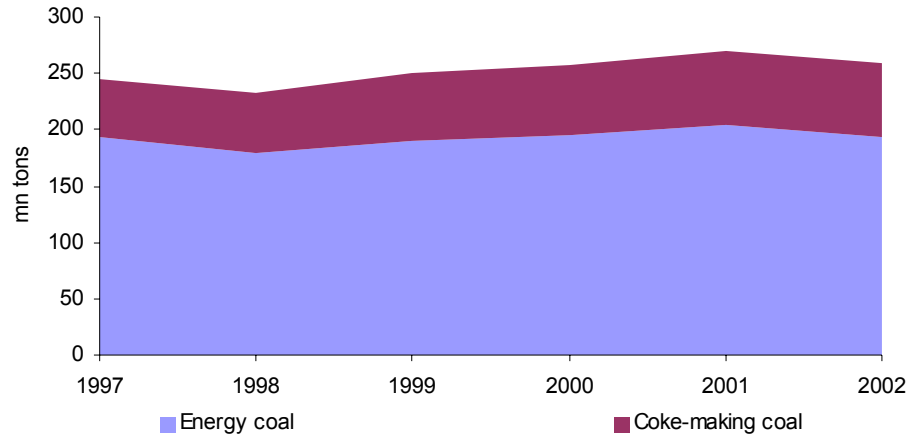
Source: Multiple media sources; Aton estimates

Coal and coke

Aside from iron ore, the next major input for steel is coke, a coal by-product. Coke is created by heating coal at high temperature without oxygen. The coal does not burn, but gases and other matter are driven away to purify the hydrocarbon content. The coke is then used in blast furnaces together with iron ore to make pig iron. Coke is also used in the steel making process to regulate the steel’s carbon content.

The production of steel begins by creating pig iron from iron ore, by melting and burning iron ore and coke in smelters. While iron is the basic content of steel, coke performs the function of breaking down the iron ore, causing associated matter to burn off. Additionally, coke penetrates the iron to make pig iron, the key input for steel.

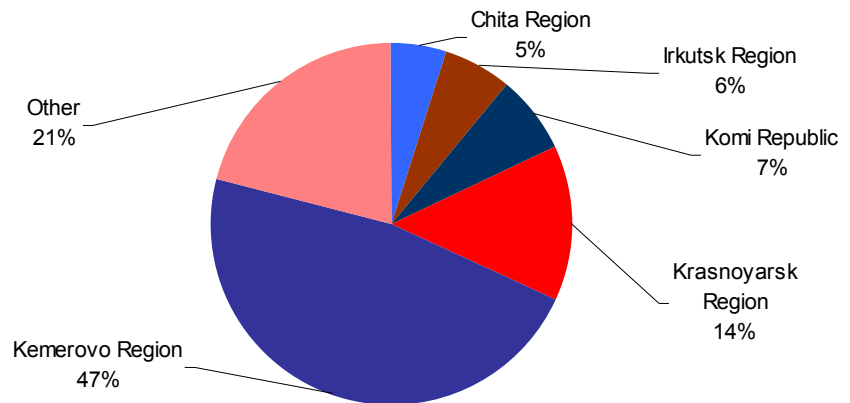
Russian coal production: increasing coke coal output



Source: Goskomstat; Aton estimates

The overwhelming majority of Russian coal production is in Siberia, with the Kuzbass (Kemerovo Region) accounting for almost half of all mined coal. The next significant production area is the European Far North in the Komi Republic. Russia imports significant quantities of Kazakh coal, though statistics do not separate coking coal from energy coal volumes, yet strangely not from neighboring Ukraine, which also has large coal deposits.

Coal production by region: the Kuzbass is king



Source: Goskomstat

As with iron ore, a major issue with coke is transport. All coal is brought to mills by rail, again demonstrating the importance of rail tariffs to steel companies. Additionally, due to geography, some steel plants are very well placed to take advantage of local supply, while others are burdened with high transport costs. In the end, however, control of coal assets is not as crucial as control of iron ore, simply because coal is a smaller input in value and volume terms, and there is more supply available on the market.

Top Russian coal companies, names to keep an eye on

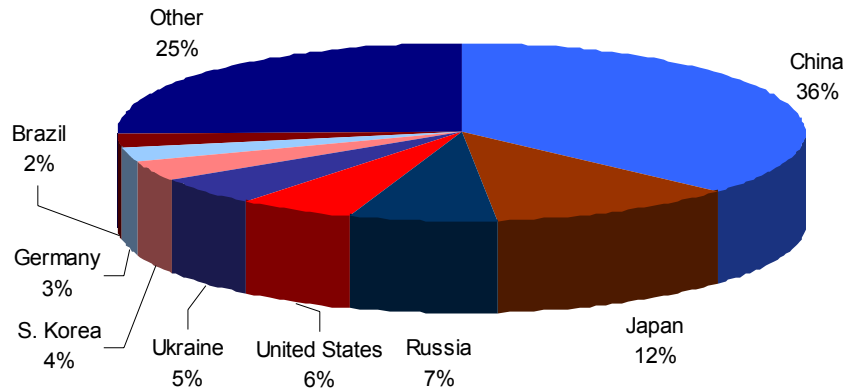
Coal company	Production of coke-coal, 000 tons/yr
Kuznetsugol	10,500
Kuzbassugol	6,600
Yuzhny Kuzbass	5,300
Kuzbassrazrezugol	4,200
Yakutugol	4,000
Mezhdurechensk	2,800
Raspadskaya	2,800
Polosukhinskaya	2,500
Prokopyevskugol	2,000
Vorkutaugol	1,500
Vorgashorsk	900
Mezhdurechye	850
Sokolovsk	700
Kiselevskugol	500
Gukovugol	450
Rostovugol	300

Source: The Russian Coal Information Agency; Russian Metal Manufacturing; Expert

Backward integration, take two

To a certain extent, the smooth operation of a steel mill depends on the secure supply of coke from coalmines and pits. Making coke, as mentioned above, simply involves heating coal without air so that associated materials and gases escape, leaving only hard coke, which is close to being pure carbon. However, only high-quality dense coal can withstand the coke-making process, as regular energy coal becomes a useless powder or a soft, sticky mass.

World coke coal production



Source: EIA

Therefore, despite massive coal deposits throughout Russia, there is only a limited amount of coke-grade coal. The same is true for the rest of the world, as the metal industry has depleted this resource. However, Russia is still a major producer of coke coal and as a result, Russian coke-grade coal is quite popular on the international market, which sells for more than \$40 per ton, almost twice as high as the price of regular energy coal, which sells for \$20-\$27 per ton. Coke-grade coal on the domestic market can be bought for \$15-\$20 per ton, if the steel mill has the right relationship with the coal producer and transport costs are taken into account. Because of this, steel companies have sought to backward integrate to secure supply of favorably priced coke-grade coal.

Lots of coke needed...

Coke coal user	Coal company supplying coke-coal	Use of coke-coal, 000 tons
Severstal	Vorkutaugol, Vorgashorsk, Kuzbass area	4,000
Novolipetsk (NLMK)	Rostovugol, Vorkutaugol, Kuzbassugol	3,300
Evrzholding (NTMK, ZSMK)	Kuzbassrazrezugol, Rapsadskaya Mine	2,000 (NTMK) + 1,500 (ZSMK) = 5,000
Magnitogorsk (MMK)	Ekibastuz (Kazakhstan), Kuzbass area	4,000

Source: Russian Metal Manufacturing (Expert Rating Agency); Expert

Severstal and Evrazholding have been the most successful in this regard. Severstal now controls the Vorkuta coalmine, as well as the coking coal operation of the Kuzbass coal mine, which ensures that Severstal is self-sufficient on coke-grade coal. Coke coal production at Vorkuta and Kuzbass is 8.1mn tons per year.

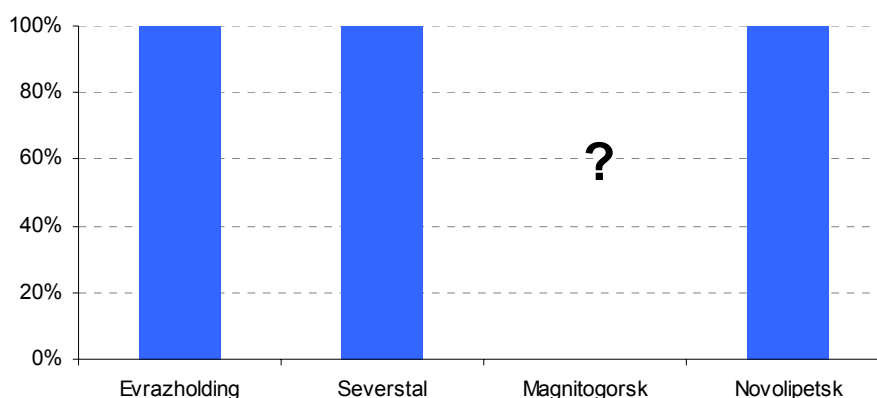
Evrzholding controls the Rapsadsk and Polosykhinsk Coal Mines, which together produce 5.3mn tons of coke-grade coal per year and cover the needs of NTMK, ZSMK and KMK.

MMK gets its coke-grade coal supplies from Yuzhny Kuzbass, a major coal company. Here the situation is rather complicated. Yuzhny Kuzbass is the main asset in the Mechel Steel Group. Breaking the trend of backward integration, Yuzhny Kuzbass is actually the core enterprise in the Mechel Steel Group, as Mechel was a later, forward acquisition. The Mechel Steel Group owns approximately 12% of MMK, and although MMK is not controlled by Mechel, it is certainly an awkward arrangement since a major supplier is also a major shareholder that may not always operate in the best interests of MMK.

Additionally, in 2001 MMK owned 26% of Kuzbassugol, the second largest producer of coke-coal in Russia that could single-handedly fulfill MMK's coke needs. However, the 26% stake was sold in 2002 to Severstal for \$52mn at a loss of \$11mn, after Severstal and MDM gained control over Kuzbassugol.

NLMK owns 18% of Kuzbassugol, which is one of the largest coke coal suppliers in Russia and is big enough to meet all of NLMK's demand, although the company also buys coke coal from Vorkuta and Rostov.

Coke-coal captive supply as % of total need



Source: Company data; Expert; Aton estimates

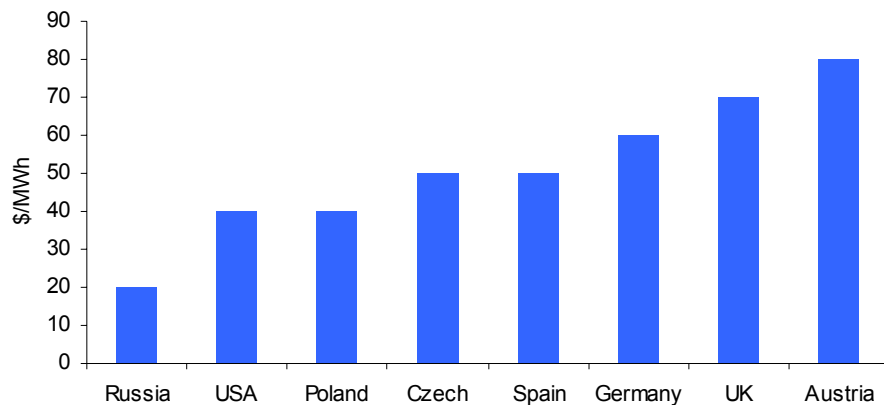
RUSSIAN STEEL COSTS AND IMPLICATIONS

Russian steel is among the cheapest in the world to produce and by far the cheapest when considering integrated mills. The sources of low input cost are many, which means no single item can threaten the overall profitability of the sector. The steel industry is a major customer for the natural monopolies, UES, Gazprom and the Railroad Ministry: the industry accounts for 15% of all electricity consumed, 8% of all gas, and 30% of all railway traffic in Russia

Electricity costs

Russian electricity is among the cheapest in the world. At an average \$20/MWh it is half the cost in the US and 30% of the price in Germany. Government regulation of electricity prices, combined with low gas and coal costs mean that Russian steel mills have much lower electricity costs than their competitors. Electricity is used for operating EAF and steel-rolling equipment, as well as for general use throughout the mill.

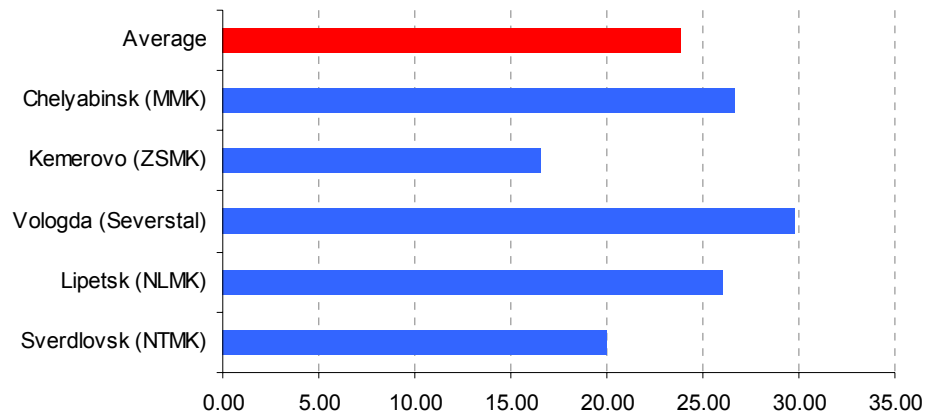
Average electricity costs: very low in Russia



Source: UES; Aton estimates

Steel mills in Kemerovo – ZSMK and KMK – have the lowest electricity cost, at 33% below the average for Russia’s major steel plants, while Severstal has the highest, at 20% above the average. Although UES is being restructured and a free energy market introduced, it is not yet clear whether this will see electricity prices for steel mills rise or fall. However, relative to Russia’s competitors in developed markets, the electricity tariff would have to rise at least three-times before this competitive advantage was lost. In this context, Russian steel mills are likely to enjoy relatively low electricity costs for a long time.

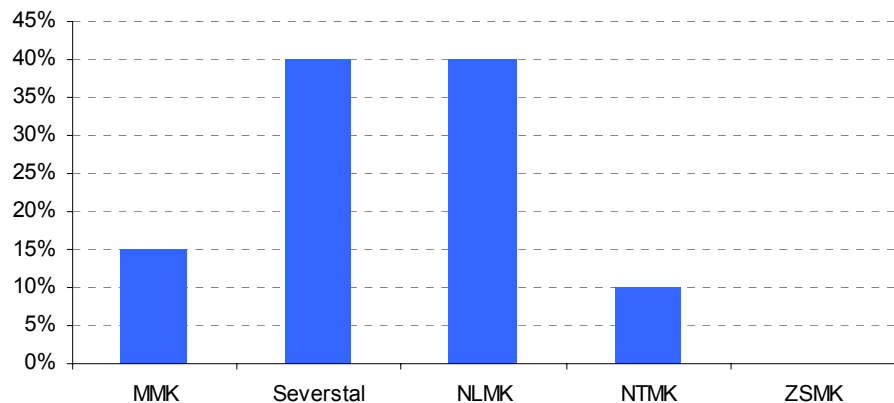
Regional electricity prices, \$/MWh



Source: Company data; Aton estimates

In addition to low electricity costs from UES subsidiaries many Russian mills have their own electricity generators. Some of this electricity is created by capturing associated heat from both blast and steel furnaces, while some of it is produced by burning gas. In this regard the main mills have some electricity generation capacity. NTMK meets 10% of its own electricity needs, but plans to increase this to 50% in the near future. ZSMK generates none of its electricity needs in-house. MMK produces about 20%, while NLMK and Severstal both generate about 40% of their annual needs.

Percentage of electricity consumption generated in-house

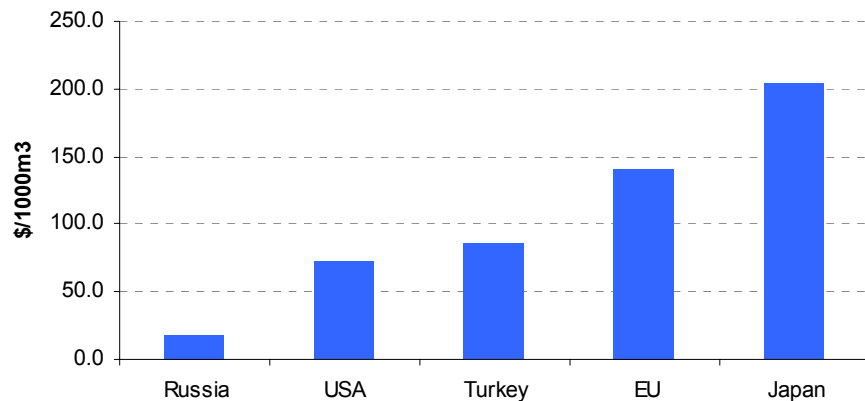


Source: Company data; Aton estimates

Gas costs: thank you Gazprom!

Steel production required tremendous amounts of gas, as it is used in both open-hearth and oxygen converter furnaces. It is also used in coke making and in blast furnaces to make pig iron. The advantage Russian steel makers have vis-à-vis their international colleagues in terms of gas costs is huge. US gas costs an average \$72 per 1000m³, while for our profiled Russian steel universe it is only \$17.33. The same scale of difference, or greater, holds true for other countries as well.

Average gas costs



Source: NLMK

Like electricity, the cost of gas for Russian mills is 60% to 90% lower than for developed market peers, meaning it is unlikely that within a relevant time period this cost advantage will disappear.

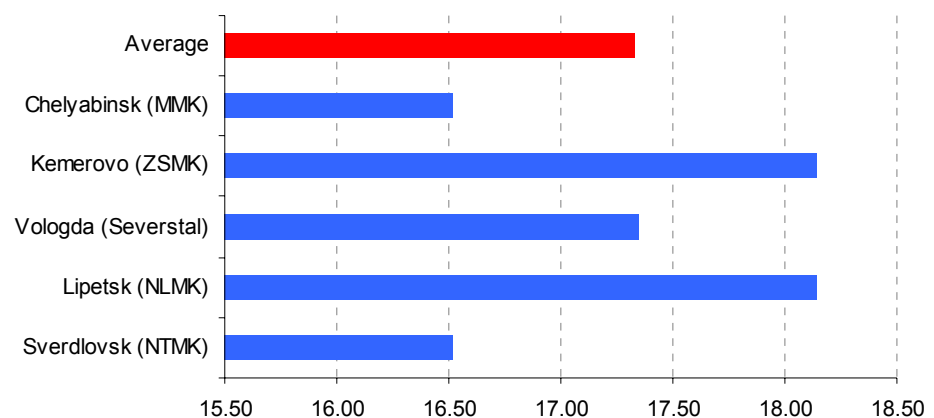
Projected Gazprom price increases

	2004 F	2005 F	2006 F	2007 F	2008 F	2009 F	2010 F
Exchange rate (R/\$, year average)	30.00	30.04	30.51	30.99	31.48	31.98	32.48
Nominal gas price increases	20.0%	20.0%	15.0%	15.0%	10.0%	10.0%	10.0%
\$ gas price increase	23.2%	19.9%	13.2%	13.2%	8.3%	8.3%	8.3%
Cumulative price rise (2003 = 1)	1.23x	1.48x	1.67x	1.89x	2.05x	2.22x	2.40x

Source: Gazprom data; Aton estimates

Increases in gas prices will hurt Russian steel mills' profitability. However, two factors will cushion the impact of these rises: (1) the gas price is in rubles, which is expected to weaken over time relative to the U.S. dollar, and given nearly half of Russian steel is sold in dollars, margins will not be fully impacted by a rise in the ruble cost of gas; and (2) Russian steel mills are directing capex at replacing older equipment and adding specific product lines to meet new demand, though mills have only begun the process of eliminating inefficiencies, including those in gas consumption.

Gas costs by region, \$/1000m³



Source: Company data; Aton estimates

MMK enjoys the lowest gas costs, with prices in the region 4.7% lower than our sample average. The highest prices are for ZSMK in Kemerovo, at 4.6% above the average. In general, however, in absolute terms the deviation in gas prices is quite low.

Labor: too many people, but still cheap

Russian steel mills are notorious for their large payrolls, which is a result of two factors: (1) the legacy of Soviet planning, which saw steel mills founded not just to make steel, but also to employ people, and many cities, like Cherepovets (Severstal) and Magnitogorsk (MMK) are completely dependent on their local mill for survival: and (2) Soviet planning made factories as self-sufficient as possible, manning many maintenance and other tasks that would normally be outsourced, are done in-house, thus boosting the total workforce.

Indeed, employment levels at Russia mills are very high. For example, Severstal, which is considered a “lean” operation by Russian standards, employs 3,854 people for every ton produced, whereas a comparable integrated mill like Bethlehem Steel employs a third of that number, or 1,300 employees per ton. Moreover compared to efficient mini-mill operations, Russian mills look extremely bloated. The low relative employment enjoyed by Nucor (721/ton steel) and POSCO (605/ton steel) is a result of EAF technology, which is widely employed at both companies.

Employment comparison: Russian mills have large payrolls

	Number of employees	Steel output, mn tons	Employees/ton of output
International peers			
Bethlehem Steel	13,000	10.0	1,300
Nucor	9,800	13.6	721
POSCO	17,000	28.1	605
Arcelor	104,000	44.0	2,364
Rautaruukki	13,000	4.3	3,023
Russia			
MMK	56,000	11.0	5,091
Severstal	37,000	9.6	3,854
NLMK	42,000	8.6	4,884
Zapsib	30,000	5.7	5,263
NTMK	31,000	5.3	5,849

Source: Company data; Aton estimates

Russian steelworkers are not as efficient as their developed country colleagues. However, they are efficient enough to ensure the cost of one “labor unit” is among the lowest in the world. Hence, while the US produces a ton of steel with 4 hours of labor, Japan with 4.5 hours and South Korea with 4.8 hours, Russia takes 16 hours, yet on a relative cost basis is still cheaper.

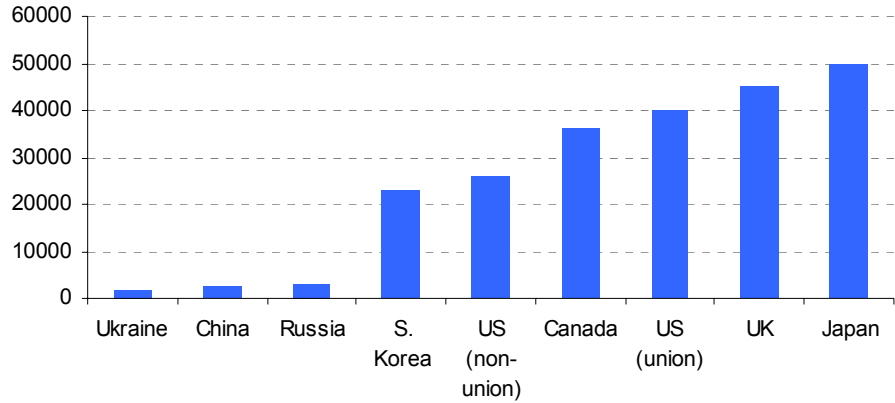
Relative efficiency: Russia ahead

	Hours of labor for one ton HR steel	Relative labor cost	Relative cost unit	Cost units relative to Russia
U.S.	4.0	13.3	53.3	3.33
Japan	4.5	16.7	75.0	4.69
S. Korea	4.8	7.7	36.8	2.30
China	22.0	0.8	18.3	1.15
Russia	16.0	1.0	16.0	1.00

Source: World Steel Dynamics; Aton estimates

Russian steelworkers make \$3,000/year on average, which is quite low compared to developed country salary levels. The only other steel labor force that is a threat to Russia is Ukraine, whose productivity is about the same as Russia’s but whose labor is only about half the cost, giving it a very low unit cost. However, Ukraine does not enjoy the same low gas costs as Russia and it imports iron ore, which negate much of the labor advantage.

Annual steelworker salary, \$

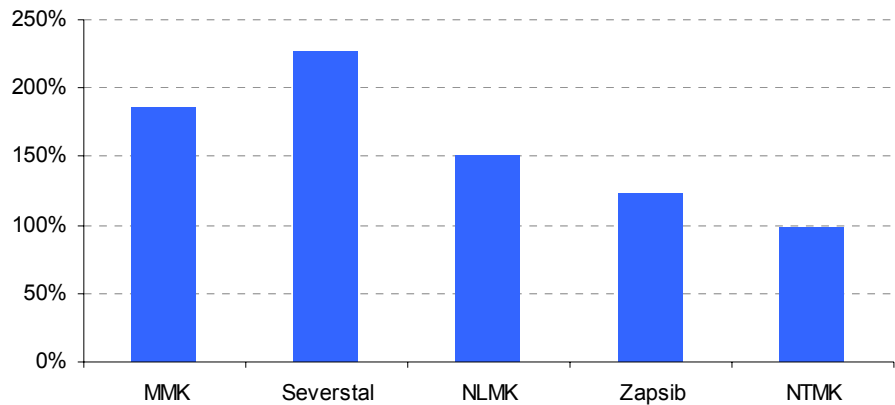


Source: Multiple media sources; Aton estimates

Unions, benefits and pension funds

The labor force of Russian steel mills is not unionized and there appears little prospect of this happening. First, because the Soviet legacy of labor unions emphasized company loyalty over higher salaries, meaning there is little pro-union sentiment among workers. And second, relative to other industries in their local towns, steelworkers are paid much better than average.

Steel worker salary relative to regional average income: a steel job is good!

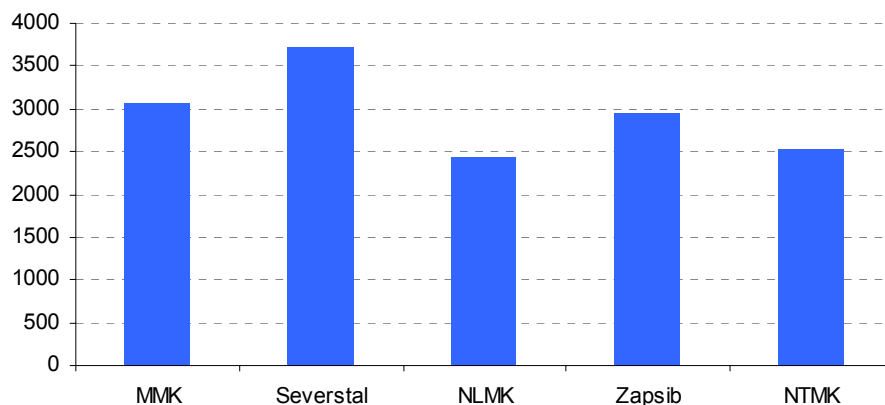


Source: Company data; Goskomstat

Along with a non-unionized work force steel mills enjoy modest pension contribution levels. Russia has both government and private pension funds – with the government version pay-as-you go and collected as a tax relative to the company’s payroll. For the big three steel mills effective government pension costs range from 11% to 25% of the total payroll. The same mills also have private pension funds that are defined benefit plans and contributions to these funds range from \$2mn-\$3mn per annum. In sum, there is no pension fund burden on Russian companies of the kind that weighs down their developed country peers.

In comparison to Russia’s labor cost regarding unions, pensions and benefits, the U.S. is a striking contrast. In the U.S. more than 90% of steel workers are unionized and the average salary for a U.S. unionized worker is 54% higher than their non-unionized brethren. In a specific example, U.S. Steel estimates that of the \$240/ton HR steel production cost, \$40 alone is for employee healthcare benefits (17% of total). For MMK, all labor production costs, including benefits, total 13% of GOGS in 2002.

Annual steelworker salary at Russian mills, \$



Source: Severstal; Aton estimates

Transport: very opaque but also very important

The Railroad Ministry has attracted much attention from reform-minded Russian policy makers. And after many false starts, railroad reform seems to be gathering steam, though due to the sheer scale of the railroads and their importance to the country, it is unlikely that any major operational changes will take place in the near- to medium term. The most dramatic change slated to take place by the end of this year is the incorporation of the railroads and the subsequent closure of the Railway Ministry.

The main problem with gauging the effect railroads have on steel mills is the fact that prices are often subject to negotiation. In some instances, steel mills have significant leverage over the railroad due to alternate shipping routes – in particular, Severstal can ship steel by river boat for half of the year, which allows the company to demand rail transport discounts. In general, though, the steel industry accounts for 30% of all traffic on Russian railroads.

Pricing for transport is also determined by the type of cargo. Coal, iron ore and steel all have different tariff rates. However, the basic proxy to determine rail costs is distance, as it is the one figure that can be objectively determined and measured. In terms of the cost of shipping steel to customers, given companies usually bill buyers for steel ex-factory, with few exceptions the shipping costs of sales shows up in neither revenues nor costs.

We have created a basic model to determine the relative advantages the top five steel mills have in terms of raw material transport costs. The equation is distance to travel from raw material supplier to steel mill multiplied by the amount transported in tons. We have performed this equation for both coke coal and iron ore and estimated the percentage of total supplies each supplier provides. We have divided the result by the total volume of iron ore and coke coal shipped to get a normalized result usable for comparison. The lower the result, the lower the relative cost of transport.

Relative transport costs: NTMK ahead of the pack

	Relative transport points
MMK	1030
Severstal	886
NLMK	894
NTMK	591
ZSMK	2655
ZSMK (if iron ore supply from Korshunovsky GOK)	830

Source: Multiple media sources; Company data; Aton estimates

The result of our analysis is that NTMK is probably the best off in terms of raw material transport costs. This is due to the company's location, close to its iron ore suppliers, and relatively proximity to the Kuzbass coalfields. Here we also see how serious the battle for Korshunovsky GOK really is. If ZSMK were able to secure its iron ore from Korshunovsky GOK and not buy it from the KMA (as it currently does), the company's transport factor would drop from 2655 to 830.

Railroad reform

The basic plan to liberalize the rail transport market in Russia is to incorporate the existing infrastructure and then divide the railroads into passenger and cargo divisions. The rails and centralized dispatcher system would remain state property, while the operators of rolling stock would be private. In fact, there are already more than 50 large cargo operators in Russia that transport 9% of all Russian cargo and the Railroad Ministry expects that by 2010 more than 50% of all cargo will be transported by private firms. Currently, 34,000 rail cars are privately owned and operated. Of course, the steel mills have realized this and it is rumored many of them either control or own significant rolling stock to facilitate deliveries.

COMPANY OVERVIEWS

RUSSIAN STEEL MILLS

Russia has nine major steel mills producing more than 2mn tons per annum. These mills can basically be divided into three groups: the big three, the middle five, and one mini-mill. For the purposes of this report we will focus on the big three, as well as two plants in the middle five that belong to Evrazholding.

The Players

Major Russian players: high industry concentration

		Output 2002, mn tons		% of total	
		raw steel	rolled steel	raw steel	rolled steel
Big three	MMK	11.0	9.8	18%	20%
	Severstal	9.6	8.5	16%	17%
	NLMK	8.6	8.0	14%	16%
Middle five	ZSMK	5.7	4.6	10%	9%
	NTMK	5.3	4.7	9%	10%
	Mechel	3.9	2.6	7%	5%
	NOSTA	2.9	2.1	5%	4%
	KMK	2.2	2.0	4%	4%
Mini-mill	OEMK	2.0	2.0	3%	4%
	Russia total	59.7	48.7	100%	100%
	Top 3	29.2	26.3	48%	53%
	Top 3 + Evrazholding	42.4	37.6	71%	77%

Source: Company data; Aton estimates

The big three

Russia's three largest steel mills are MMK (Magnitogorsk), Severstal, and NLMK (Novolipetsk). These mills make a wide range of products, but generally specialize in flat steel products directed toward the machine building, automotive, and engineering industries. Additionally, the scale of the companies allows them to keep per unit costs low, making them the best financial performers in the sector. As single-site companies, these mills have a high concentration of labor in one city, and in the case of Severstal and NLMK, the mills represent more than 50% of industrial production in their respective regions. In short, the big three are massive, high profile companies that play a significant role in the economy and politics on both the regional and national levels.

The middle five

The middle five steel plants are also integrated mills, although they are half to a third the size of the big three and their assets tend to be older and less efficient. These mills also tend to specialize in long products.

During privatization the middle five mills fell into an odd category: they were big enough to make juicy targets for industrialists, but small enough to fall below the government's radar screen. The result was massive abuse by owners during the 1990s that saw most of the plants run into the ground. The effects of this are still being felt today, as KMK is now a collection of separate companies due to its liquidation, while NOSTA is in the process of being broken up to settle a more than \$300mn debt. Mechel is in many the ways the odd man out, as it makes specialty steels (high alloy content) with a completely different market niche than its peers.

Evrazholding: ZSMK, NTMK, KMK

The two largest plants in the middle five, NTMK and ZSMK, were acquired by Evrazholding between 1998 and 2001. By the end of 2003 it is anticipated these two mills will be joined with the assets of KMK, making Evrazholding Russia's largest steel concern, with 13.4mn tons of steel output. All of the these assets together represent the following share of Russian output:

- 100% of railroad rails
- 84% of beams and channels
- 45% of common wire
- 44% of reinforcement steel
- 40% of profiled rolled stock

All of the above product types are long-products and the three mills have very small flat product output volumes.

The mini-mill

Russia has one fully-fledged mini-mill, the Oskol Electrical Metal Plant, operating EAF. However, the plant is not able to capitalize on the low labor required by its technology due to its 12,300 employee payroll; even more ironically, Oskol has the highest employee/ton of output ratio of any major Russian steel, when just the opposite should be the case.

Oskol not getting the benefits of EAF

Mini-mill	Number of employees	Steel output, mn tons	Employees/ton of output
Oskol	12,300	2.1	5,857
Nucor	9,800	13.6	721
POSCO	17,000	28.1	605

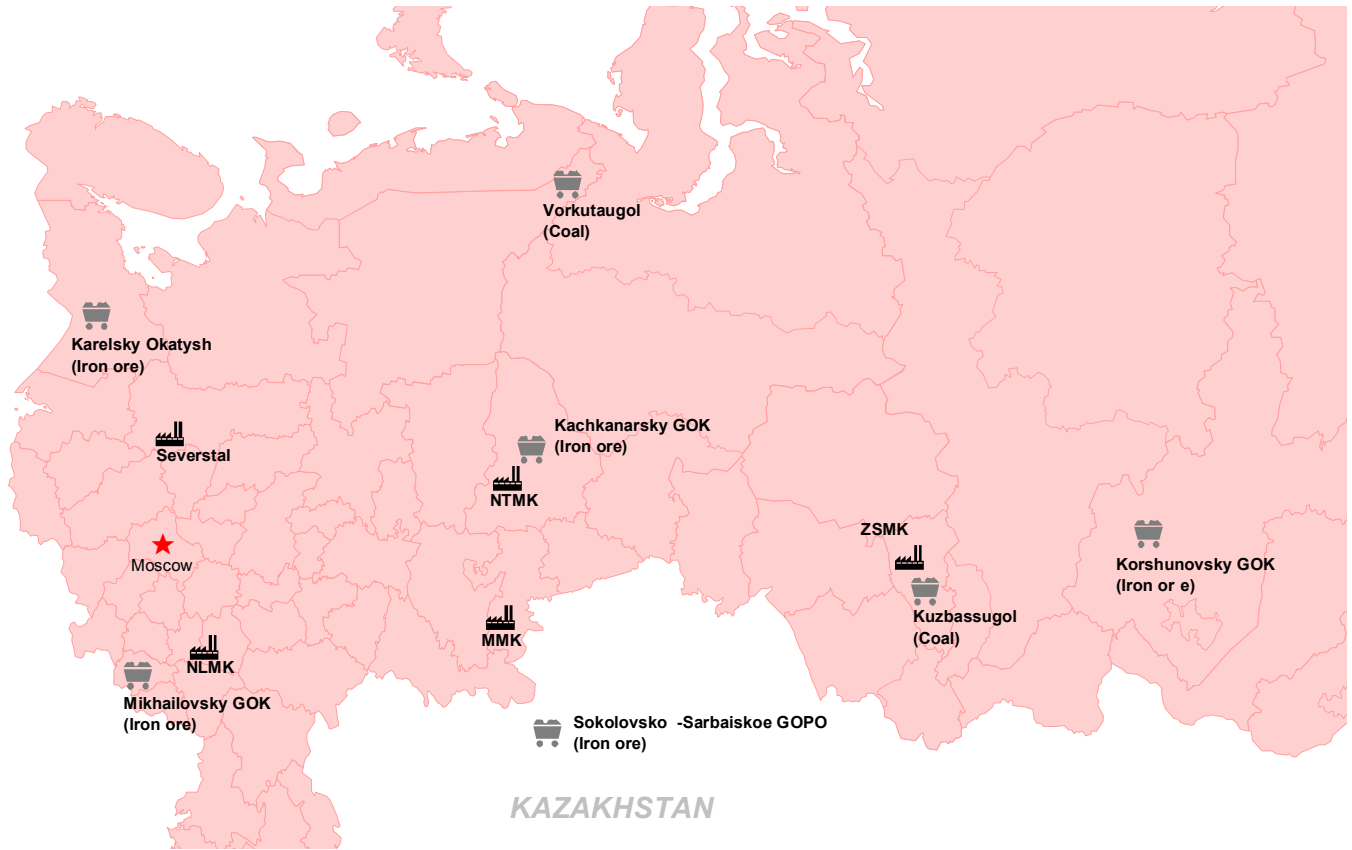
Source: Company data; Aton estimates

Nonetheless, Oskol is well placed to serve the export markets (it is located in Belgorod on Russia's western border) and it could make an interesting target if a larger mill came in and streamlined operations. The company is supermajority owned by Gazprom (indirectly).

Our survey

Below we provide an overview of the significant companies in the Russian steel industry that we feel have the possibility to become major market stocks. That is not to say that there are not other companies in the sector that are both interesting and provide value to investors. However, the companies we have profiled all have rather transparent financial results and are relatively open about describing operations, corporate plans and capital market intentions.

Map of Russian steel mills and raw material suppliers



MAGNITOGORSK (MMK)

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
MAGN	Buy	\$0.20	\$0.24	19%
MAGNP	Buy	\$0.12	\$0.18	49%

Capitalization & stock data	Common	Pref.	IAS Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	1,595	319	Revenue	1733	2065	2784	2741
Net debt (cash), \$ mn	133		EBITDA	312	465	998	810
EV, \$ mn	2,046		Net income	144	115	577	449
Shares out., mn	7,973	2,658	Operating cash flow	267	212	776	721
Free float, (est)	6%	NA	Valuation				
Dividend, \$ (2002)	0.0003	0.001	EV/EBITDA	6.6	4.4	2.1	2.5
Dividend yield	0.16%	0.92%	P/E	13.3	16.6	3.3	4.3
			P/CF	7.2	9.0	2.5	2.7
			P/Book	1.2	1.1	0.8	0.7

Overview

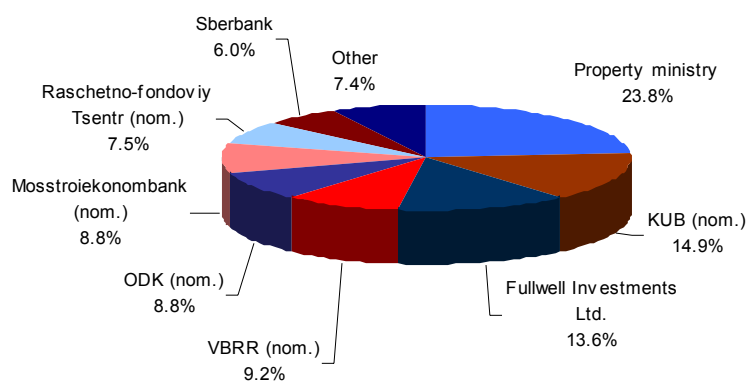
MMK was built in the 1930's as part of Stalin's massive industrialization drive, and designed to exploit a huge iron ore deposit nearby. At the time it was one of the largest and most modern steel plants in the world.

MMK produced 11mn tons of steel in 2002 and has a total capacity of 12mn tons. The company's exports represent 57% of revenues and come mainly from the Asian, European and Middle Eastern markets, while domestic clients are mostly machine building plants in the Urals and Volga regions. Total employment at the company is 56,000 people.

Ownership

An ongoing issue at MMK has been its ownership structure. Only in the late 1990s did the company's management come out on top as the controlling group of shareholders.

MMK shareholder structure (common): Management has 50%+, but not clear where



Source: FKTSB

Management's grip on the company is a simple majority, although it would prefer to have supermajority control (75+1%), which has led to various corporate governance issues.

MMK shares have been de-listed from the RTS and the company has not been particularly enthusiastic about re-embracing the equity markets. No doubt the fact the government still owns a 23.8% voting stake in the company influenced management's behavior, as it is not interested in a high share price before they buy the shares. This has led to another corporate governance issue: in response to the government's plan to auction its remaining stake in the company before the end of the year, it has been reported that MMK plans to issue a €300mn Eurobond, for which it has already hired underwriters. Although the proceeds from the bond are said to be earmarked for corporate development, the simple fact is that MMK generates more than enough cash flow to meet operational needs and even its most ambitious capex requirements. The company's 2003 investment plan is \$96mn, and its 2004 plan \$95mn. Our forecast 2003 operating cash flow is \$776mn and \$721mn in 2004.

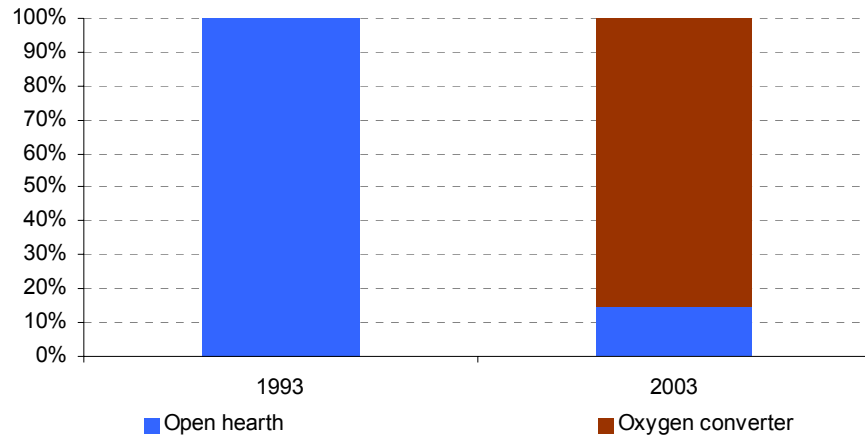
The wolves are out prowling

Who is management afraid of? For starters, the Mechel Steel Group, which already owns a 16% voting stake and is the main coke supplier to the company. If Mechel were to acquire negative control (25+1%), it would probably increase the deadlock at the company and force one side to sell out. In this case, given the Mechel Steel Group supplies almost all of MMK's coke it has significant operating leverage over the company. Aside from Mechel, there are a number of players that could potentially want a piece of MMK. Oleg Deripaska's Base Element group, which already has steel operations at neighboring NOSTA, would be a likely auction participant, as well as Iskander Makhmudov, the man behind UGMK, and a potential supplier of iron ore and coke. Finally, Fullwell Investments Limited, which owns 13.6% and is rumored to be controlled by NLMK chairman, Vladimir Lisin, might want to increase its stake and force a horizontal merger, as Lisin has mentioned that operational efficiency could be much higher at MMK. The field of players points to the fact that MMK management may have unintentionally made its situation worse, rather than better, by not embracing the capital markets more strongly. If MMK were able to raise its market profile to Severstal levels and embrace portfolio investors who are hungry for alternative investment ideas in Russia, it is likely the auction of the government's stake would draw a high price and deter opportunists from participating "on the cheap." Assuming that MMK had an active secondary market for its shares where a reasonably liquid price could be used, the government's stake would likely be worth \$350mn to \$450mn, which is from 100% to 150% higher than the \$175mn management has mentioned in the media as the final price for the stake.

Asset base and capex

MMK's asset base has been rapidly modernized in the past few years as part of the company's effort to make up for neglect during the 1980s and 1990s and to position the company to make higher value added products. Capex for 2002 was \$204mn, down from \$287mn in 2001. The company's 2003 capex plan is for \$96mn, after which annual capital investments should drop even further. A major direction for capex is to completely close the company's open hearth furnaces and replace them with oxygen converter assets. The company's current steel making capacity is 15% open hearth, 85% oxygen converter and no EAF. At the beginning of the 1990s 100% of the company's capacity was open-hearth furnace.

MMK furnace type: rapid modernization



Source: Company data

An additional direction of the company's investment plans is to modernize the company's coke making facilities, reconstruct the CR steel shop and to improve thick sheet production capability.

MMK capex plans: the biggest expenditure is in the past

\$ mn	2001	2002	2003 F	2004 F	2005 F	2006 F	2007 F
Capex	287	204	96	95	30	145	105

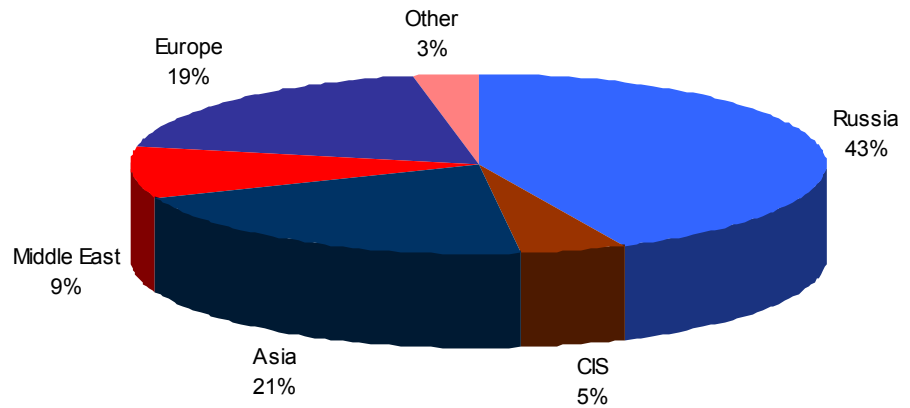
Source: Company data

The interesting point about MMK's capex drive is that its main focus is on rebuilding and modernizing existing assets. This highlights the neglect the plant suffered in Soviet times, as well as management/owner intentions to build and maintain a sustainable business and not milk MMK for cash until it falls apart. In numbers, MMK's capex and acquisitions have raised the company's PP&E from \$1.853bn in 2001 to \$2.125bn in 2002, and D&A for 2002 was \$220mn.

Revenue breakdown

MMK receives 57% of its revenues from export sales. Due to the nature of import tariffs against Russian steel, most of the company's high value products, such as galvanized steel, are sold domestically, while low value products, such as slabs, are sold for export. Asia is the most significant export market, as MMK takes advantage of strong regional economic growth. Surprisingly, the company has significant sales to Europe, despite EU import quotas that limit Russian steel market access.

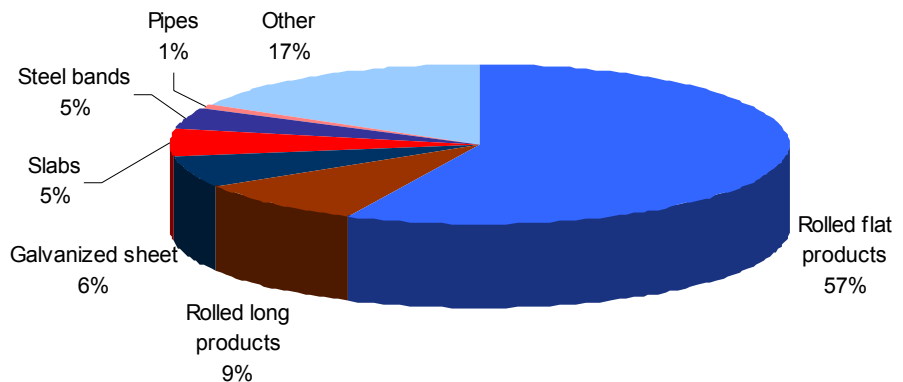
MMK revenues by market



Source: Company data; Aton estimates

In terms of product offerings, MMK is fairly well diversified for a Russian steel mill. The company does make a variety of high value products, such as pipe, galvanized steel and steel bands, along with the more common hot and cold rolled sheet and semi-finished steel slabs.

Revenues by product: majority is flat products such as HR and CR sheet



Source: Company data

Subsidiaries and equity investments

There are few significant MMK investments on the company’s balance sheet that fully complement operations, such as an iron ore mine or a stake in the local energy utility. With the exception of trading vehicles, the main equity stakes the company owns are in metal processing plants that are operationally 100% dependent on MMK.

Financial results and summary forecast

Profit and loss statement

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Revenue	1733	2065	2784	2741	2726	2683
COGS	-1333	-1516	-1657	-1800	-1898	-2000
Gross profit	400	549	1127	941	828	683
SG&A	-251	-322	-343	-363	-381	-396
EBITDA	312	465	998	810	693	544
Operating profit	106	245	755	556	429	272
Interest income	-12	-43	5	37	58	74
Net income	144	115	577	449	369	263

Source: Company data; Aton estimates

Balance sheet

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Cash	77	222	472	1013	1555	1958
Inventories	233	231	276	300	316	333
Accounts receivable	267	266	381	375	373	368
Other current assets	3	11	10	10	10	9
PP&E	1853	2125	2063	1989	1825	1699
Other long-term assets	91	3	12	11	11	11
Total assets	2524	2858	3214	3698	4091	4379
Accounts payable	409	292	409	444	468	493
Short-term debt	195	137	0	0	0	0
Other current liabilities	0	0	0	0	0	0
Long-term debt	81	218	0	0	0	0
Long-term deferred tax liabilities	239	322	322	322	322	322
Other long-term liabilities	47	32	50	49	49	49
Total liabilities	971	1001	780	815	839	864
Minority interest	7	50	50	50	50	50
Equity	1546	1807	2384	2833	3202	3465
Total liabilities and equity	2524	2858	3214	3698	4091	4379

Source: Company data; Aton estimates

Cash flow statement

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Operating activities						
Net income	144	115	577	449	369	263
Reconcile tax, interest, minority differences	-13	41	0	0	0	0
Depreciation	206	220	242	254	263	272
Other non-cash items	-106	-40	0	0	0	0
Changes in working capital	36	-124	-43	17	10	14
Net cash from operating activities	267	212	776	721	643	548
Investing activities						
Capex	-287	-204	-180	-180	-100	-145
Net acquisitions, other	-73	66	-9	0	0	0
Financing activities						
Proceeds from borrowing	98	73	-337	0	0	0
Dividends paid	-2	-2	0	0	0	0
Change in cash	3	145	250	540	543	403
Cash beginning of year	74	77	222	472	1013	1555
Cash end of year	77	222	472	1013	1555	1958

Source: Company data; Aton estimates

SEVERSTAL

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
CHMF	Buy	\$108.00	\$127.64	18%

Capitalization & stock data	Common	IAS Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	2,387	Revenue	2009	2271	2969	2943
Net debt (cash), \$ mn	-11	EBITDA	293	512	1105	925
EV, \$ mn	2,376	Net income	-15	189	661	534
Shares out., mn	22.1	Operating cash flow	295	417	731	788
Free float, (est)	8%	Valuation				
Dividend, \$ (2002)	2.32	EV/EBITDA	8.1	4.6	2.2	2.6
Dividend yield	2.15%	P/E	NM	12.6	3.6	4.5
		P/CF	8.1	5.7	3.3	3.0
		P/Book	1.1	1.0	0.8	0.7

Overview

Severstal is Russia's second largest steel mill and the most progressive in terms of embracing the capital markets. The company is located roughly between its iron ore and coke coal suppliers, so that while it has no adjacent source of raw materials, the total cost of transporting these materials to the plant is roughly the same as other Russian steel mills.

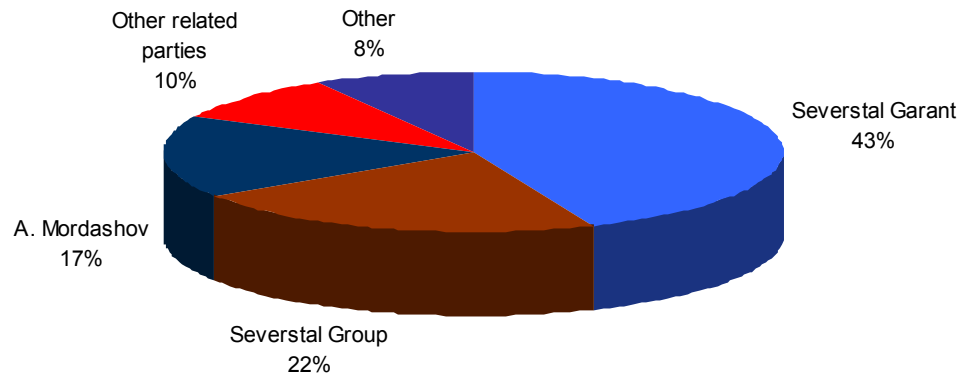
Severstal produced 9.6mn tons of steel in 2002 with a total capacity of 10mn tons per annum. Export revenues make up 48% of total sales and the main export markets are Asia and Europe. Domestic customers are mostly from the automobile, pipe and shipbuilding industries. The company employs 37,000 people.

Additionally, Severstal's majority owners and management appear to have firmly decided to raise the company's profile in the equity markets. The company is going forward with its plan to have a GDR by the end of this year. Also, on Aug. 15 the BoD approved an unexpected interim dividend of \$6.39 per share (total payout of \$141mn). In terms of minority shareholder treatment, Severstal is the most progressive Russian steel company.

Ownership

Severstal is controlled by the company's chairman Aleksei Mordashov. The company's shareholder structure became fairly set soon after privatization in the mid-1990s, as Mordashov was able to use Severstal's employee fund, which he at one time managed, as a spring board to consolidating control. Currently only about 8% of the company regularly trades on the market, although management intends to raise float in conjunction with its GDR plans, due to be completed by the end of 2003. By the end of 2003 there should be up to 15% of shares in free float.

Severstal shareholding structure



Source: Company data

Severstal was spared the ownership control battles that plagued most of the metal sector in the 1990s, and as a result the company had an early start in modernization and acquisitions. This also has a downside, though, as the company's management has made acquisitions that seem more like empire building than adding complementary businesses. The most obvious of these is Uaz and Zavolsky Motors, which were spun off as Severstal-Avto in the form of a dividend not long after they were acquired. The company also acquired and then spun-off raw material suppliers as Severstal-Resource. Although acquiring raw material suppliers was a smart move in terms of ensuring operational stability, the idea of acquiring major steel customers is a little odd in terms of building value.

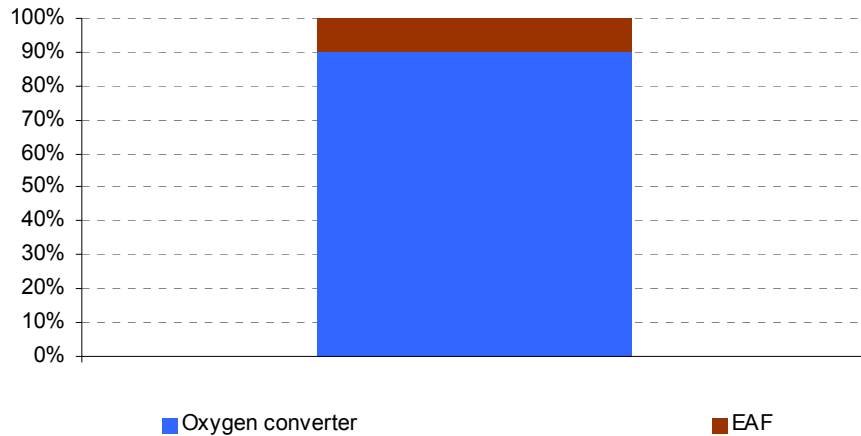
As a result of these acquisitions, Severstal is just one part of the bigger, and rather opaque, Severstal Group. Although presumably the owners behind Severstal (the steel mill) and Severstal Group are roughly the same, the fact that the steel mill is just one of many companies means that minority shareholders may be marginalized. In the case of Severstal-Resource, Severstal is able to buy supplies at cost, which enhances the financial performance of Severstal, and keeps the liabilities of the suppliers off the books. However, in the case of Severstal-Avto, it is not yet clear whether steel will be provided at below-market prices. It must be said, however, that management has taken this issue seriously and has made repeated assurances that value will be concentrated at Severstal.

Asset base and capex

Severstal is deep into its program of asset modernization. The company is currently lifting its capex plan for this year to \$363mn, from the previously planned \$247mn. The main purpose of the rise in capex is to accelerate the company's reconstruction and to upgrade facilities in order to increase output before the end of this year.

The furnace capacity at Severstal is quite modern, with open hearth technology long-ago replaced with either oxygen converter (90% of total) and EAF (10%).

Severstal furnace capacity: very modern



Source: Company data

The company is also involved in shifting its asset base to make more value added products, primarily directed towards the domestic market. Two projects in particular stand out: Severgal and the JV with NTMK to make wide-diameter pipe. Severgal is a JV with the world’s largest steel company, Arcelor, to make high quality galvanized steel mainly for the domestic auto industry. Severstal owns 75% of the JV, while Arcelor owns the remainder. The project will cost \$170mn, will produce 400,000 tons of product and is set to come online in 2004. Severstal is also forging ahead with its plan to make wide diameter pipe. The sheet for the pipes will be made at NTMK and then rolled at Severstal’s subsidiary Izhora Pipe Plant. Both Severstal and NTMK will own 50% of the JV, which will produce 450,000 tons of pipe per annum, which is 45% of Vyksa’s wide diameter capacity and 23% of Chelyabinsk Pipe’s. The project is slated to cost \$130mn and will come online in 2005.

Capex peaks in 2003 due to favorable steel price environment

\$mn	2001	2002	2003 F	2004 F	2005 F	2006 F	2007 F
Capex	81	184	363	190	188	120	100

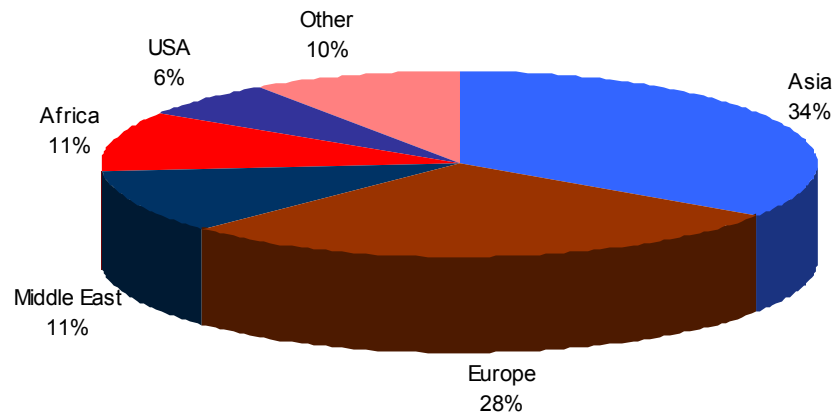
Source: Company data; Aton estimates

In 2001 the company commissioned American Appraisal to assess the value of its property, plant and equipment. As a result, there was a net gain on its book value of \$1.03bn. At the end of 2002 the company’s PP&E was \$1.84bn and D&A for the year was \$197mn.

Revenue breakdown

Severstal’s export revenues were 42% of the total for 2002. As with MMK, Severstal has seen the export markets for its high value products progressively narrow as import barriers have limited access. Despite this, the company has been able to crowd out other Russian steel mills through lower transportation costs, so that Severstal receives a disproportionate share of Russian exports to the EU and USA.

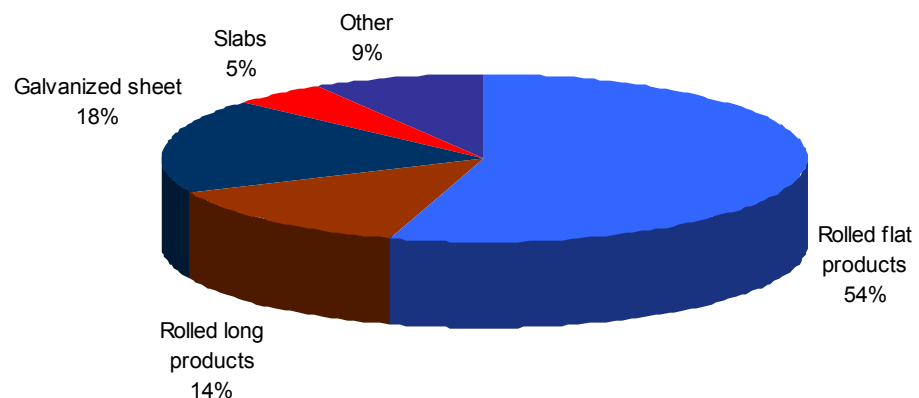
Severstal export revenue origins: strong exposure to both Asia and Europe



Source: Company data

Severstal's product portfolio has a very low proportion of semi-finished steel, and the company plans to completely eliminate this category in the next couple of years. With export markets geared towards semi-finished steel, and the domestic market to higher value added, it is no surprise that Severstal has a lower level of export revenues relative to the other big three steel mills. In the domestic market, Severstal's product positioning is one of import substitution, as Russian industry's demand for wide diameter pipe and galvanized steel are not met by domestic production.

Severstal revenue breakdown by product



Source: Company data

Subsidiaries and equity investments

Severstal has multiple subsidiaries and equity investments that complement the steel mill's operations. Owned directly are companies that expand Severstal's product offering or ensure Severstal's raw material supplies.

Additionally, Severstal's main shareholders own other assets that have dealings with Severstal, as either raw material suppliers or steel customers. These assets are significant and include Uaz, Zavolzhsky Motors, and several iron ore mines. Also, Severstal-associated entities own stakes in Kuzbassugol and Vorkutaugol, which are both owned directly by Severstal. However, from an equity point of view, these related parties are not relevant to the evaluation of Severstal, as an equity holder in Severstal has no exposure to these related companies. Additionally, the majority owners of Severstal have made a clear choice to concentrate value at the Severstal level and not in the associated companies, such

as the coal and iron ore mines. Therefore, by owning the raw material suppliers Severstal's majority owners are able to sell raw material at cost to Severstal, thus improving margins and ensuring uninterrupted operations.

Severstal significant subsidiaries and equity investments

Company	Activity	% control
Cherepovets Steel Rolling Mill	Steel finishing	72.4%
Izhorsky Pipe Plant	Pipe production	100.0%
Kuzbassugol	Coal mining	11.5%
Vorkutaugol	Coal mining	3.9%

Source: Company data

The main related entities to Severstal are Severstal-Avto and Severstal-Resource. The main assets in Severstal-Avto are a 55% stake in Uaz and a 63% stake in Zavolzhsy Motors. Directly related to the steel business is Severstal-Resource. Within this holding are the Karelsky Oktash (50%) and OLKON (51%) iron ore mines, Kuzbassugol coal mine (50%) and two entities that are involved in niobium production (a steel alloying element). Severstal majority owners are also the majority owners of Severstal-Resource, and for now their strategy is to concentrate value at the steel mill and use Severstal-Resource as a cost center. This allows Severstal to enjoy wider margins and conduct its operations with a narrow asset base. Within a relevant time frame there is no reason for this arrangement to change. The only issue is with regard to minority shareholders in Severstal-Resource, and their potential claims of value stripping; however, these minorities could easily be bought out. In the long run, it is likely Severstal will put Severstal-Resource on its books, as a major change in either company's ownership would likely put an end to using Severstal-Resource as a cost center.

Financial results and summary forecast

Profit and loss statement

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Revenue	2009	2271	2969	2943	2934	2848
COGS	-1485	-1509	-1640	-1770	-1870	-1963
Gross profit	524	762	1328	1173	1064	4811
SG&A	-319	-374	-423	-472	-519	-560
EBITDA	293	512	1105	925	785	577
Operating profit	91	305	875	677	526	310
Interest income	2	-18	-3	28	51	70
Net income	-15	189	661	534	436	286

Source: Company data; Aton estimates

Balance sheet

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Cash	101	188	212	810	1366	1843
Inventories	247	247	167	181	191	200
Accounts receivable	131	167	325	322	322	312
Other current assets	327	515	578	573	572	555
PP&E	2025	1959	2092	2034	1915	1747
Other long-term assets	169	113	114	114	114	114
Total assets	3001	3189	3489	4033	4478	4771
Accounts payable	104	153	135	145	154	161
Short-term debt	99	93	0	0	0	0
Other current liabilities	123	126	126	126	126	126
Long-term debt	66	85	0	0	0	0
Long-term deferred tax liabilities	337	288	288	288	288	288
Other long-term liabilities	40	36	30	29	29	28
Total liabilities	769	780	578	589	597	604
Minority interest	48	36	36	36	36	36
Equity	2184	2373	2875	3409	3845	4132
Total liabilities and equity	3001	3189	3489	4033	4478	4771

Source: Company data; Aton estimates

Cash flow statement

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Operating activities						
Net income	-15	189	661	534	436	286
Reconcile tax, interest, minority differences	-76	-34	0	0	0	0
Depreciation	201	208	230	248	259	267
Other non-cash items	77	52	0	0	0	0
Changes in working capital	108	3	-160	5	2	23
Net cash from operating activities	295	417	731	788	697	577
Investing activities						
Capex	-97	-198	-363	-190	-140	-100
Net acquisitions, other	-330	-128	0	0	0	0
Financing activities						
Proceeds from borrowing	55	156	-343	0	0	-1
Dividends paid	-25	-160	0	0	0	0
Change in cash	-102	87	24	597	557	476
Cash beginning of year	203	101	188	212	810	1366
Cash end of year	101	188	212	810	1366	1843

Source: Company data; Aton estimates

NOVOLIPETSK (NLMK)

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
NFMF	Buy	\$315.00	\$516.56	64%

Capitalization & stock data	Common	GAAP Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	1,890	Revenue	1322	1712	2199	2060
Net debt (cash), \$ mn	-384	EBITDA	350	618	1055	824
EV, \$ mn	1,506	Net income	88	338	710	539
Shares out., mn	6.0	Operating cash flow	215	497	772	729
Free float, (est)	4%	Valuation				
Dividend, \$ (2002)	9.83	EV/EBITDA	4.3	2.4	1.4	1.8
Dividend yield	3.12%	P/E	21.6	5.6	2.7	3.5
		P/CF	8.8	3.8	2.4	2.6
		P/Book	1.1	0.9	0.7	0.6

Overview

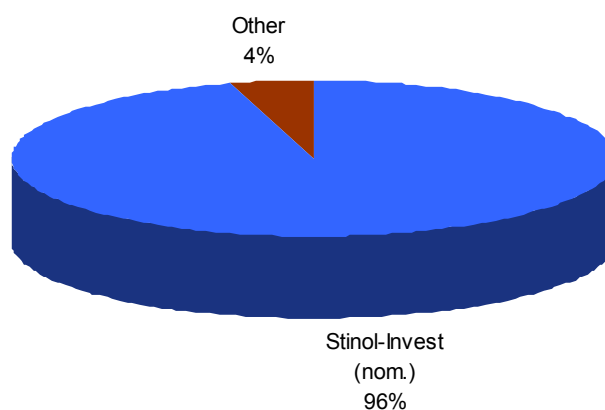
NLMK is the smallest of the Big Three. The company is adjacent to the huge KMA iron ore deposit and well placed to export steel through both St. Petersburg and Rostov. The company produced 8.6mn tons of steel in 2002 and has an annual capacity of 9mn tons.

NLMK is much more export oriented than its Big Three counterparts. Export represents 72% of all sales by volume. The company also has significant sales to the two most closed steel markets: EU and US. Total employment at the company is 42,000 people.

Ownership

NLMK is dominated by Stinol-Invest, a company that reportedly has close ties to Vladimir Lisin and managers at NLMK. Lisin serves as chairman of NLMK and was heavily involved in both ferrous and non-ferrous metal trading in the 1990s. Lisin and Vladimir Potanin's Interros group vied for several years for control of NLMK and their relationship waxed and waned between amicable and hostile. However, in March 2002 Interros sold out its 34% stake in the company giving Lisin and his associates full control over the steel mill.

NLMK ownership: no doubts about who's the boss



Source: FKTsB

NLMK and capital markets: Bogdanov-esque

Although Lisin is far from being a “Red director,” he does have deep roots in the metal industry, including a metal-engineering education and a long career in metallurgy. He is without doubt a “metals man,” unlike other Russian industrialists such as Mikhail Khodorkovsky or Vladimir Potanin, who knew next to nothing about their core businesses before they acquired them. Despite his wealth and power, Lisin has no intention of raising his profile and, according to media reports, has repeatedly turned down offers from politicians to enter the public arena. This fact combined with the massive cash flow at NLMK, which covers all capex and operational needs comfortably, means that the company has little need for the capital markets.

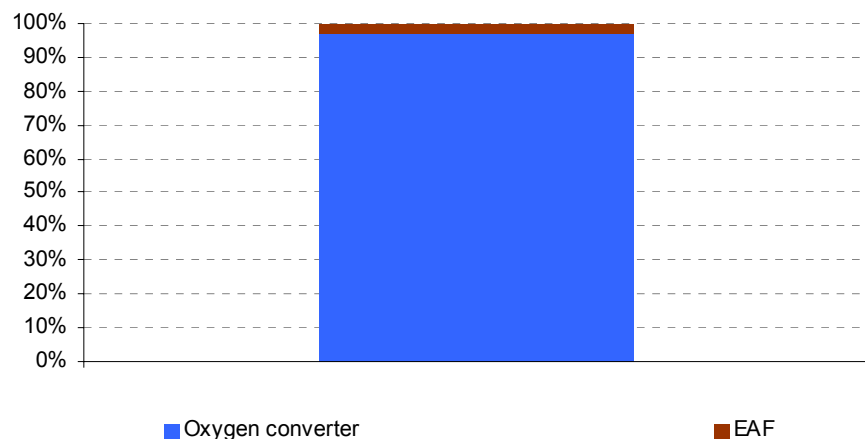
Unlike Surgutneftegaz, to which an analogy can be drawn in terms of the need for capital markets, NLMK is probably the most transparent of the Big Three. It publishes annual results to GAAP standards and discloses all operational information with details about specific markets, product types, etc. Additionally, the company has very few red flags in terms of corporate structure. So while Severstal has issues such as the relationship between it and the Severstal Group, and MMK has a shareholding structure with several competing factions, all with different interests, NLMK is quite straightforward.

The company owns minority stakes in several key suppliers, which it lists on its books. Additionally, the fact that it is 96% is owned by one entity means there is no ambiguity in relation to who is in charge.

Asset base and capex

NLMK was one of the first Russian steel mills to modernize its facilities and now boasts modern furnaces and rolling equipment. In terms of furnace technology, the company has long been a 100% oxygen converter and recently added some EAF capacity. Currently, the company is 97% oxygen converter and 3% EAF.

NLMK furnace capacity



Source: Company data; Aton estimates

The company’s immediate plans for capex are mostly geared towards raising quality control of rolled products and replacing/reconstructing rolling mills. At the end of 2002 NLMK had \$1167mn in PP&E, and 2002 D&A was \$146mn.

Capex at NLMK

\$mn	2001	2002	2003 F	2004 F	2005 F	2006 F	2007 F
Capex	141	154	198	211	212	150	100

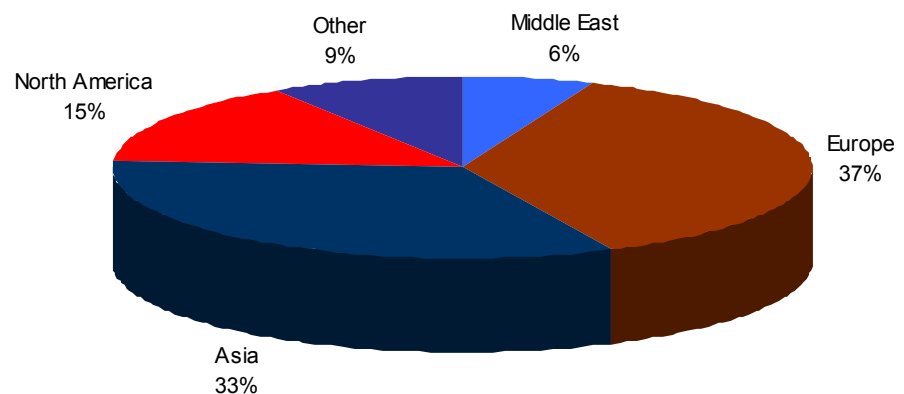
Source: Company data; Aton estimates

Revenue breakdown

NLMK is heavily dependent on exports, as the company ships 72% of all output to foreign markets. This higher than average reliance on exports is probably due to two factors: (1) geographically the company is well situated to export, as the St. Petersburg and Rostov ports are relatively close, giving NLMK a competitive edge compared to MMK, for example, which is deep in the Ural mountains and far from ports and major export markets; and (2) NLMK is located in the middle of Russia's black earth zone, which is famous for its agriculture, but rather limited in heavy machine building and engineering companies. The demand from industry in this region is therefore weaker than from the Volga, Urals, and Central regions. As a result, NLMK has to compete directly with Severstal and MMK in those regions, as well as numerous smaller steel plants for domestic orders there.

In terms of export, the company has successfully penetrated the U.S. and EU markets, despite the various restrictions they impose on Russian steel. The main reason for this is the company's strategy of focusing on pig iron and semi-finished steel for exports. Fifty-two percent of all exports by volume are slab, and an additional 7% is pig iron. Because of this strategy the company is able to maintain high export volumes and circumnavigate import barriers, as these are usually directed against high value steel.

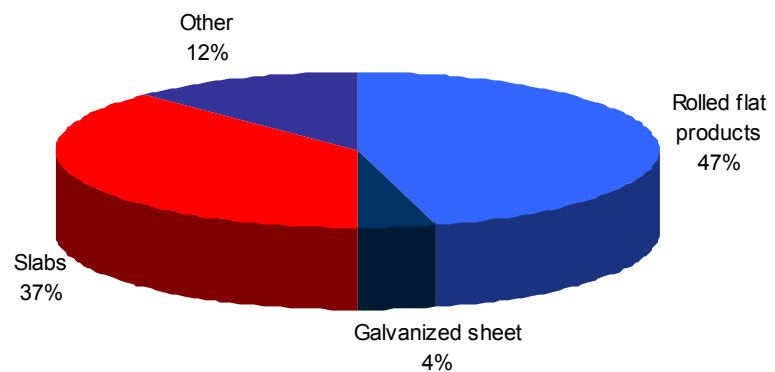
NLMK export breakdown



Source: Company data

Product diversification at NLMK is quite strong, with a clear divergence between high and low value products. As a result, while most other mills actively eschew semi-finished products, NLMK thrives on their production; and while at Severstal slab is about 7% of sales in terms of volume and at MMK about 9%, at NLMK it is a massive 37%. At the other end of the spectrum, NLMK is heavily involved in making various coated and high-grade electric steels. Aside from galvanized steel, which is also made at MMK and Severstal, the company has a monopoly on pre-painted steel and is one of the largest Russian producers of electrical steel.

NLMK product breakdown by volume: either low or high value, nothing in between



Source: Company data

Subsidiaries and equity investments

NLMK has no investments in companies that are major production subsidiaries or suppliers. Instead, most of NLMK's equity investments are multiple targeted minority stakes in suppliers, which give the company board representation and allow it to both influence corporate decisions and to keep informed of supplier issues. Additionally, since these minority stakes are booked on NLMK's balance sheet, minority investors get direct exposure to the benefits of these investments without the risk of related party transactions.

NLMK main equity investments: just enough to have a say

Company	Activity	% control
Kuzbassugol	Coal mining	17.7%
Lebedinsky GOK	Iron ore mining	12.0%
Yakovlevsky Rudnik	Iron ore mining	9.5%
Lipetskenergo	Electricity utility	12.2%
Lipetskoblغاز	Gas transmission utility	19.4%
Almetievsky Pipe Plant	Pipe production	14.5%

Source: Company data

We note that there are overlapping positions between NLMK's minority stakes and other steel enterprises. For example, Severstal both directly and through Severstal-resource majority owns Kuzbassugol. Gazprom, which is the indirect owner of the Oskol Electric Metal Plant, also has 82% in Lebedinsky GOK. The Almetievsky Pipe Plant is majority owned by OMK, the same concern that majority owns the Vyksa Pipe Plant. All of this points to the fact that there is some collaboration and cooperation in the steel sector and that Lisin himself is a central figure in the industry, who has amicable relations with almost all steel players.

Financial results and summary forecast

Profit and loss statement

\$ mn, US GAAP	2001	2002	2003F	2004F	2005F	2006F
Revenue	1322	1712	2199	2060	2026	1963
COGS	-1049	-1096	-1187	-1287	-1366	-1443
Gross profit	274	615	1012	773	660	520
SG&A	-68	-103	-110	-117	-122	-127
EBITDA	350	618	1055	824	720	589
Operating profit	190	472	902	656	537	393
Interest income	6	19	30	51	68	84
Net income	88	338	710	539	461	364

Source: Company data; Aton estimates

Balance sheet

\$ mn, US GAAP	2001	2002	2003F	2004F	2005F	2006F
Cash	190	390	865	1372	1789	2209
Inventories	180	199	216	234	248	262
Accounts receivable	241	305	392	367	361	350
Other current assets	6	53	39	36	36	34
PP&E	1175	1168	1230	1287	1334	1288
Other long-term assets	105	95	111	108	108	107
Total assets	1896	2210	2852	3404	3876	4250
Accounts payable	108	164	163	176	187	198
Short-term debt	92	3	0	0	0	0
Other current liabilities	10	17	17	17	17	17
Long-term debt	3	3	0	0	0	0
Long-term deferred tax liabilities	20	16	16	16	16	16
Other long-term liabilities	0	2	2	1	1	1
Total liabilities	234	206	197	210	221	232
Minority interest	10	13	13	13	13	13
Equity	1652	1991	2642	3181	3642	4006
Total liabilities and equity	1896	2210	2852	3404	3876	4250

Source: Company data; Aton estimates

Cash flow statement

\$ mn, US GAAP	2001	2002	2003F	2004F	2005F	2006F
Operating activities						
Net income	88	338	710	539	461	364
Reconcile tax, interest, minority differences	0	-1	0	0	0	0
Depreciation	160	146	153	168	183	196
Other operating items	8	26	0	0	0	0
Changes in working capital	-40	-13	-91	23	3	9
Net cash from operating activities	215	497	772	729	647	568
Investing activities						
Capex	-141	-154	-215	-225	-230	-150
Net acquisitions, other	-50	-62	-16	3	1	1
Financing activities						
Proceeds from borrowing	6	-81	-7	0	0	0
Dividends paid	0	0	-59	0	0	0
Change in cash	31	200	475	507	418	419
Cash beginning of year	159	190	390	865	1372	1789
Cash end of year	190	390	865	1372	1789	2209

Source: Company data; Aton estimates

EVRAZHOLDING (NTMK AND ZSMK)

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
NTMK	Buy	\$0.45	\$0.85	88%

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
ZSMK	Buy	\$35.00	\$78.01	123%
ZSMKP (no ticker)	NA	NA	\$58.51	NA

Capitalization & stock data		IAS Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	1,053*	Revenue	2083	2064	2928	3025
Net debt (cash), \$ mn	414	EBITDA	180	410	1071	1026
EV, \$ mn	1,467	Net income	173	233	669	666
Shares out., mn	0.0	Operating cash flow	65	264	725	831
Free float, (est)	NM	Valuation				
Dividend, \$ (2002)	NM	EV/EBITDA	8.1	3.6	1.4	1.4
Dividend yield	NM	P/E	6.1	4.5	1.6	1.6
		P/CF	16.2	4.0	1.5	1.3
		P/Book	3.2	2.4	0.9	0.6

*Note: this is the combined market cap of NTMK and ZSMK

Overview

Evrazholding is the newest entrant on the Russian metal scene and is a product of the merger of NTMK and ZSMK. As a group, the company produced 11mn tons of steel in 2002, while capacity is about 12.5mn tons.

Operationally, the company has few synergies in terms of its ability to lower SG&A costs, however after acquiring ZSMK in 2001 to compliment NTMK, the cost of iron ore from third parties dropped 10% due to the ability of Evrazholding to order in larger quantities and thus receive discounts. Although the company has a monopoly position in many long product classes, Evrazholding management sees little danger of anti-monopoly action, as there are many marginal steel players that hinder the ability of the group to dictate prices to customers.

Ownership

Evrazholding is owned by several industrialists, although the head of the group is Aleksander Abramov, who got his start trading coal to NTMK in the 1990s. By 1998 full control over NTMK was established and in 2001 ZSMK was brought out of bankruptcy administration and under Evrazholding's control. In April 2003 the company's majority shareholders purchased the assets of KMK, as part of that company's bankruptcy liquidation. KMK is likely to be transferred into Evrazholding proper in the near future.

Evrazholding is a Cypriot entity that controls 74% of NTMK and 79% of ZSMK, though the day-to-day management of the steel mills is done by a Russian entity. Steel trading for the group is performed by EH Trade domestically and Ferrotrade for exports. EH Trade is 2% owned by the Russian management entity and 49% owned by NTMK and ZSMK,

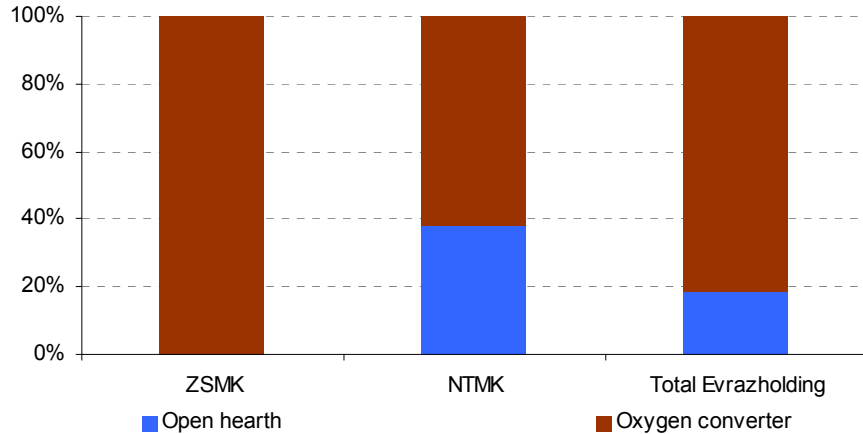
while Ferrotrade is 100% owned by the Cypriot entity. The convoluted ownership/operational structure means consolidation of the group is a significant undertaking. To further complicate matters, the owners of the Cypriot entity and the Russian management entity do not completely overlap.

The company has retained Ernst & Young as both its auditor and to advise the company on optimizing its corporate structure. Although there has been no explicit announcement about full consolidation and bringing in minority shareholders, there are several implicit hints this is the direction the company is headed. Evrazholding has said the question of going to the capital markets will be decided by 2005. Additionally, the company has a capital markets department actively looking at this question. The very nature of Evrazholding's shareholders suggests they are not "metals" men, as Lisin at NLMK is. The top cadres at Evrazholding are all Moscow-educated physicists and mathematicians, which would suggest they are more interested in creating shareholder value than making steel, which further suggests they will want an equity currency and an exit route out of their current holdings. Finally, the company's recent \$150mn Eurobond issue indicates the majority owners of the group are progressing toward transparency and disclosure. The prospectus of the debt issue has revealed much information about Evrazholding's operations, financials, and actual equity holdings.

Asset base and capex

Evrazholding's main plants saw much neglect in the 1990s, as they were large enough to attract serious attention but small enough to fall below the federal government's radar screen. As a result, medium tier Russian steel companies were subject to numerous control disputes that made owners focus more on short-term gains than on long term sustainability. The 1998 crisis shook many of these players out of the market, which is when Evrazholding acquired NTMK. In 2001 ZSMK was acquired as the company used its experience in the NTMK takeover to guide it through the process of bringing ZSMK out of bankruptcy to secure a majority equity stake. Because of the rather late formation of Evrazholding, a unified, single purpose business plan for both NTMK and ZSMK is a new phenomenon, and the company is playing catch-up in terms of modernization. However, due to the different product profiles of NTMK and ZSMK, the amount of capex relative to the Big Three is slightly lower, as long products for construction and infrastructure require less processing than flat products directed toward machine building and engineering. The most significant capex outlay is to replace the remaining open hearth furnaces at NTMK with oxygen converter technology, and to install continuous casting machines at the new furnace for making wide strips to be used in pipe making.

Evrazholding furnace capacity: NTMK still needs upgrade, ZSMK is quite modern



Source: Company data; Aton estimates

ZSMK is one of the newest steel mills in Russia, as it started operations in 1964. The company uses 100% oxygen converter furnace technology.

Evrazholding capex: heavy spot right ahead

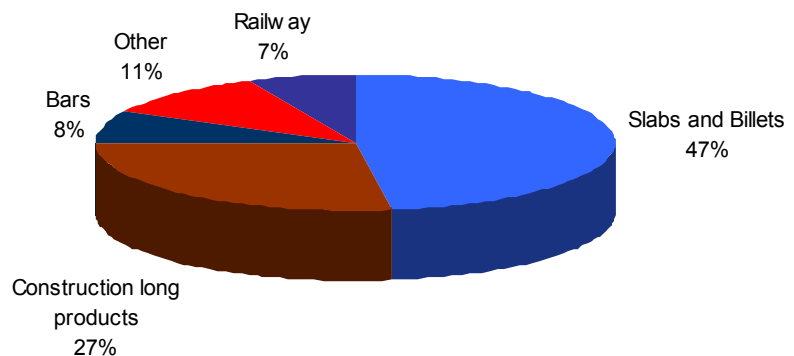
\$mn	2001	2002	2003 F	2004 F	2005 F	2006 F	2007 F
Capex	39	56	136	150	150	120	100

Source: Company data; Aton estimates

Revenue breakdown

Evrazholding’s product range is markedly different from the Big Three. While the Big Three are almost entirely devoted to making flat products, Evrazholding’s steel mills make almost exclusively long products, which have a completely different market niche. Long products are primarily used for construction and infrastructure; for example, ZSMK was specifically built to supply construction projects to develop Siberia and the Far East.

Evrazholding product breakdown



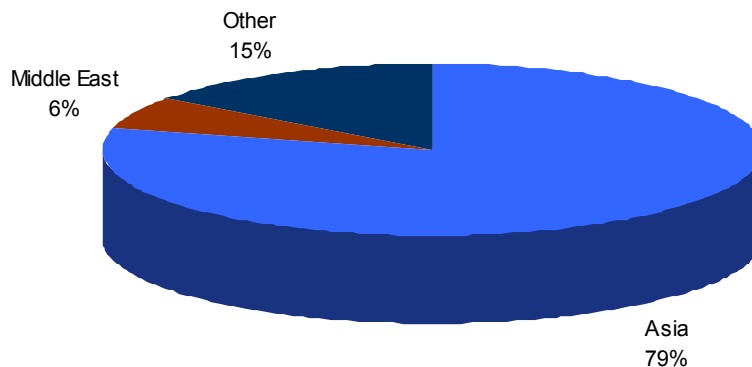
Source: Company data

Evrazholding exported 48% of output in 2002, and in terms of location and transport costs it is extremely well placed to supply China and S-E Asia. About 17% of all export sales go to China, 15% to Taiwan and 14% to Vietnam. The company also owns its own port in the Russian Far East city of Nakhodka, allowing it to export by ship without high port charges.

Domestically, the company’s main customers are the Railroad Ministry, pipe industry and construction sector. Specifically, NTMK supplies the Railroad Ministry with about 40% of

its rails, 40% of its railcar wheels and 100% of its railcar wheel “tires.” Total volume of these products was 0.6mn tons. In construction, Evrazholding is a major supplier of beams and rebars for building projects across Russia. Additionally, the company has several niche products, such as steel wire (made at ZSMK) and grinding steel balls (NTMK).

Evrazholding export revenue breakdown



Source: Company data

Subsidiaries and equity investments

Evrazholding currently comprises NTMK, ZSMK and four trading arms. NTMK, in turn, owns 19% of the Vysogorsky GOK, a major supplier of iron ore to NTMK, which is majority owned by the majority shareholders of Evrazholding (though a separate vehicle). Evrazholding directly owns 74.2% of NTMK and 79.4% of ZSMK.

Evrazholding shareholders also control major suppliers to the group, in much the same way as Severstal majority shareholders control suppliers.

Evrazholding majority shareholders significant stakes

Company	Activity	% control
Kuznetskugol	Coal mining	50.0%
Vysogorsky GOK	Iron ore mining	>75%*
Nakhodka Sea Port	Port for Asian shipments	>75%
Raspadskaya Coal Mine	Coal mining	20.0%
KMK assets	Steel mill	100.0%

* including the 19% owned by NTMK

Source: Company data

Evrazholding is still not a single entity, and so it is not yet possible to consolidate the group into a “single share.” Because of this it is still not clear how the company might enter the equity markets. Additionally, within the group value is concentrated not at the steel mill level but at the trading entities, which makes the financial statements of the steel mills not representative of either the subsidiaries’, or the overall group’s true financial position.

Evrazholding has recently issued a Eurobond for \$150mn, the proceeds of which will be used to move assets owned by the beneficial shareholders of Evrazholding into the Evrazholding group. In practice, this means rolling over the short-term debt used in the recent acquisition of KMK assets. At the end of the transaction, Evrazholding will have three steel mills, with a combined output (2002) of 13.4mn tons.

Financial results and summary forecast

Profit and loss statement

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Revenue	2083	2064	2928	3025	2926	2804
COGS	-1796	-1573	-1768	-1905	-2009	-2114
Gross profit	287	492	1160	1120	918	690
SG&A	-257	-242	-258	-272	-286	-297
EBITDA	180	410	1071	1026	820	590
Operating profit	37	257	902	848	632	393
Interest income	-32	-61	-21	29	52	69
Net income	173	233	669	666	519	351

Source: Company data; Aton estimates

Balance sheet

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Cash	8	16	136	816	1389	1836
Inventories	212	236	233	251	265	279
Accounts receivable	135	107	201	207	200	192
Other current assets	141	166	217	224	217	208
PP&E	1082	985	952	924	886	809
Other long-term assets	-86	-65	-27	-24	-27	-32
Total assets	1492	1445	1712	2399	2929	3292
Accounts payable	240	214	242	261	275	290
Short-term debt	384	300	0	0	0	0
Other current liabilities	0	0	0	0	0	0
Long-term debt	216	130	0	0	0	0
Long-term deferred tax liabilities	163	154	154	154	154	154
Other long-term liabilities	27	68	67	69	67	64
Total liabilities	1030	866	463	484	496	508
Minority interest	138	139	139	139	139	139
Equity	324	441	1110	1776	2294	2645
Total liabilities and equity	1492	1445	1712	2399	2929	3292

Source: Company data; Aton estimates

Cash flow statement

\$ mn, IAS	2001	2002	2003F	2004F	2005F	2006F
Operating activities						
Net income	173	233	669	666	519	351
Depreciation	143	153	169	178	188	197
Other non-cash operating items	-231	-74	0	0	0	0
Changes in working capital	-20	-48	-113	-13	15	18
Net cash from operating activities	65	264	725	831	722	566
Investing activities						
Capex	-39	-56	-136	-150	-150	-120
Net acquisitions, other	-66	-8	-37	-4	4	4
Financing activities						
Proceeds from borrowing	68	5	-431	2	-2	-3
Dividends paid	-45	-197	0	0	0	0
Change in cash	-17	8	120	679	573	447
Cash beginning of year	25	8	16	136	816	1389
Cash end of year	8	16	136	816	1389	1836

Source: Company data; Aton estimates

FORECAST AND VALUATION

DCF MODEL ASSUMPTIONS AND VALUATION

We have tried to be reasonably conservative in our valuations. Our main assumption has been that 2003-2004 will be peak years in the steel cycle, after which prices will fall back to their historical average. However, we have made no serious attempt to forecast future steel prices beyond the 2005 horizon. Under reasonably conservative cost assumptions and assuming 5% long-term FCF growth after 2010, all of our DCF-based fair value estimates lie well north of current share prices.

Revenues

We have based our revenue forecast on a proxy price for steel that is specific to each steel company. We have taken the past prices available for each product and weighted them relative to each product type, so that HR sheet is a “1,” while CR sheet is anywhere from 1.27 to 1.34, or 27% to 34% higher. The same was done for slabs. The main difficulty was determining the relative price for value added steel, such as galvanized sheet, since the volumes of these various products are lumped together. However, we have used an overall relative price of “1.54” to “1.78.” With Evrazholding we have chosen a slightly different route, as the company’s products are different than the Big Three. Here we used the base product, billets, as our “1” value, with the other beams, bars and rails at anywhere from 1.5 to 2.3, or 50% to 130% higher.

We have accounted for changes in the product mix as we expect Russian mills to focus on higher quality products, as a result of which the total value of the company’s output and sales will increase. This is combined with planned output increases at several Russian companies.

We also accounted for sales market changes as Russian mills gradually shift sales toward the domestic market, with steel consumption picking up on the back of overall Russian economic growth.

Finally, we have reflected in our model the fact that domestic prices exceed export prices for comparable products by roughly 20%.

COGS

We have split COGS into six different cost segments, with each having different drivers.

Labor costs

For labor, we have used the total number of employees involved in production and the average salary per employee. We have assumed the total payroll number at steel mills will decline over time due to natural attrition and steel companies not replacing these workers.

The rate of natural attrition is between 1% and 4% for different mills, depending on past rates and the overall scope for cutting. Salary levels are forecast to rise at half the rate of inflation, due to the limited alternative employment opportunities in the steel mills' regions. Total salary costs are adjusted for our forecast change in the \$/ruble rate.

Depreciation and amortization

Depreciation and amortization are determined by existing asset depreciation rates, plus an average 15-year lifespan for new capex. Although some companies have negative goodwill, we have chosen to exclude this from our forecast model.

Iron ore and alloys costs

Iron ore and alloy metal costs have risen over the past few years, although they are still anywhere from 15%-20% cheaper than on international markets. We do not have a breakdown of what proportion of this cost segment is alloy metals and what is iron ore.

We believe that as the price of iron ore approaches international levels, the rate of price increases will slow to low single digits after 2005. Additionally, we have assumed no efficiency gains, so that total iron ore consumption stays directly proportionate to total steel production.

Coal costs

We have assumed that the main drivers for iron ore costs hold true for coal as well.

Energy costs

Energy costs, in particular gas prices, are the Pandora's box industry observers believe may cause margin reductions at Russian mills. We have used our estimated increase in Gazprom's tariff rate as a proxy for all energy, be it gas or electricity. This is quite conservative as many steel mills are increasingly becoming self-sufficient in electricity production, which is anywhere from 20% to 50% lower than the cost of buying electricity from the local utility. Gas price increases will likely be significant, however, and we have modeled that by 2006 total energy costs will have almost doubled relative to 2002 levels.

Other costs

We have assumed that this cost segment will grow at half the rate of total forecast inflation. Since these costs are usually for services and overheads, we feel there is limited potential for a rapid increase; this is particularly true for services, as steel mills will have pricing power given they are likely to be a monopoly client.

SG&A

This is perhaps the most unpredictable item in the P&L, and we have forecast the item to rise with the overall rate of inflation.

Net interest expense

Although we do not want to forecast capital structure for our profiled companies, we have taken the liberty of assuming that all available excess cash will be used to pay down debt. Since most of our surveyed companies have little to no net debt, and going forward we predict these companies will have significant cash balances, there is significant net interest income for all of our profiled steel mills. However, we feel that this allows us to capture the value of the cash on the balance sheet without making capital decisions. This also serves, in a way, as a proxy for the dividend potential of our profiled companies.

The balance sheet and cash flow statement

We have assumed the companies were operating normally in the 2001-2002 period, and have used the key balance sheet indicators from this period for forecasting, such as days payable, inventory turnover and days receivable. Debt is a function of the amount of operating cash the company has minus capex and changes in working capital. No company in our valuation needed to borrow to meet operating or capex needs. For capex expenditure levels we used, where available, information from company management.

CAPM

Our DCF models are based on the financial forecasts presented in the previous section, as well as the key CAPM/discount rate assumptions outlined in the table below. We believe CAPM is the best of the limited choices available to price an asset, but are well aware that statistically CAPM is not very robust and only as good as the inputs used. Because of this we have selected a beta based on liquidity and our general perception of equity risk at each company valued.

Beta used: capturing the risk element

Company	MMK	Severstal	NLMK	Evrazholding
Unlevered beta	2.25	1.50	2.00	2.50

Source: Aton estimates

In deriving our discount rate, we have a set methodology for Russia risk, which is based on sovereign long-term debt, expected premium for equity investments, as well as long term growth potential.

DCF framework

Model factor	Assumption	Comment
Long-term risk free rate	6.0%	Trailing 10-year yield on US 30 bond; around 4% at present
Russia sovereign risk premium	2.5%	Measured as the difference between U.S. and Russian 30-year bonds as of the end of 2002; the spread narrowed further in 1H03
Standard equity premium	4.0%	Increased to reflect greater risk to equities worldwide; in line with the forward equity premium as calculated in a recent study (Roger Ibbotson and Peng Chen, Financial Analysts Journal, January/February 2003)
Cost of debt/Levered beta	Adjusted for after-tax cost of debt	To reflect the increased ability of Russian companies to deduct interest payments from taxable income
Forecast beta	Based on average monthly trading volumes and perceived equity risk	Although subjective, we have strived to be conservative, so that our target prices do not ignore company risk, which can be fairly high in the steel sector due to ownership structure, consolidation risk, and capital market plans.
Long-term free cash flow growth rate	5.0%	Efficiencies in production have not even begun to be tapped: much scope for improvement

Source: Aton estimates

Terminal growth

We have chosen a 5% terminal growth rate for all of our DCF models. Our main justification is that potential efficiency gains at Russia's steel plants have not even begun to be exploited, leaving much room for operational and financial improvement. In our model we have assumed over the forecast period that the amount of inputs needed per ton of steel produced stays the same: iron ore, coal, gas, etc. We assume that with modernization the companies will become more efficient at using inputs and energy. Additionally, there is much room for labor efficiency, as Russian steel workers are only a fourth as efficient as their US colleagues. It seems likely that after the current round of capex directed to replace and modernize steel making assets, the next step for steel companies is to squeeze out efficiencies and concentrate on control systems, automation and similar improvements.

FCF increases beyond our forecast period are not dependent on revenue growth or increased output, which we feel is not a main driver for the business in the long term. Additionally, the terminal value of our DCF valuation is less than 30% for all of our profiled companies so that we feel comfortable with the overall conservative nature of our valuation.

VALUATION

Through forecasting financial performance and using the standard CAPM method with the aforementioned betas, we have arrived at a year-end 2003 fair value for the companies surveyed. In the case of Evrazholding, we have assigned value to its two main subsidiaries based on estimated share of each subsidiary in overall Evrazholding's value.

Russian steel valuation: still upside, despite high discount factor

	MMK	Severstal	NLMK	Evrazholding	NTMK	ZSMK
Beta (unlevered)	2.25	1.50	2.00	2.50		
Cost of equity	20.8%	16.1%	18.1%	22.5%		
Cost of debt (after tax)	7.6%	7.6%	7.6%	9.1%		
WACC	18.8%	15.5%	18.1%	20.1%		
DCF value, \$mn	2,562	2,846	2,728	2,589	1,252	1,157
Terminal as % of total	20.3%	27.9%	28.7%	16.9%		
Fair value per share	\$0.24	\$127.64	\$516.56		\$0.85	\$78.01
Current price	\$0.20	\$108.00	\$315.00		\$0.45	\$35.00
Upside	19.4%	18.2%	65.0%		88.0%	122.9%

Source: Company data; Aton estimates

International peers

Russian steel mills are very cheap relative to their international peers, in both emerging markets and developed markets: on 2003 forward indicators, Russian steel is anywhere from 17% to 57% less expensive

Additionally, in terms of market capitalization and EV, Russian steel mills have the necessary scale to be significant players in the capital markets, given that the market capitalization and EV of such famous companies as USX and Corus is not significantly higher than that of Russian mills.

Valuation comparison: Russia is cheap relative to its peers

	Country	Price, 18.9.03 \$	MCap \$mn	Net debt \$mn	EV \$mn	EV/EBITDA			P/E			P/CF		
						2002	2003 F	2004 F	2002	2003 F	2004 F	2002	2003 F	2004 F
Russian majors														
MMK	Russia	0.20	1,595	451	2,046	4.4	2.1	2.5	16.6	3.3	4.3	9.0	2.5	2.7
Severstal	Russia	108.00	2,387	-11	2,376	4.6	2.2	2.6	12.6	3.6	4.5	5.7	3.3	3.0
NLMK	Russia	315.00	1,890	-384	1,506	2.4	1.4	1.8	5.6	2.7	3.5	3.8	2.4	2.6
NTMK	Russia	0.35	459	144	603		NM			NM			NM	
ZSMK	Russia	35.00	447	124	571		NM			NM			NM	
Russian average						3.8	1.9	2.3	11.6	3.2	4.1	6.2	2.7	2.8
Emerging markets														
Baoshan Iron & Steel	China	0.64	8,042	795	8,537	5.8	5.6	5.8	15.6	16.8	17.8	0.7	6.8	6.8
Cia Siderurgica Paulista	Brazil	0.18	814	1,587	2,107	9.7	7.6	6.9	-17.4	15.8	NA	5.9	3.5	NA
Eregli	Turkey	0.02	806	360	1,098	9.7	3.8	4.8	18.3	6.6	7.1	4.5	1.5	0.7
Gerdau Metalurgica	Brazil	15.50	676	1,971	3,662	6.9	5.8	NA	7.4	5.3	NA	NA	NA	NA
Tata Iron & Steel	India	5.67	2,091	716	2,814	10.4	6.4	6.0	38.2	12.6	12.4	7.0	7.3	8.0
Emerging markets average						8.5	5.8	5.9	12.4	11.4	12.4	4.5	4.8	5.2
Relative Russia average						45%	32%	39%	94%	28%	33%	136%	57%	53%
Developed markets														
Arcelor	Luxem.	13.40	7,138	8,051	15,931	8.5	6.4	5.9	NM	12.1	10.2	5.5	4.2	4.2
Corus	UK	0.46	14	1,980	3,492	NM	5.6	4.1	0.0	NM	0.4	NM	0.0	0.0
JFE Holdings	Japan	23.72	13,633	0	13,633	6.8	5.0	5.3	85.2	26.6	22.2	8.4	7.0	6.7
Nippon Steel	Japan	1.85	12,578	10,149	22,727	10.8	8.0	8.2	NM	NM	18.9	8.4	6.2	5.6
Nucor	USA	48.27	3,775	676	4,639	8.5	6.4	5.4	23.2	22.0	14.6	7.1	7.0	5.5
USX-US Steel	USA	19.46	2,010	1,191	3,998	8.3	5.4	5.3	22.6	14.3	11.3	6.7	4.1	3.9
Developed markets average						8.6	6.1	5.7	32.7	18.8	12.9	7.2	4.7	4.3
Relative Russia average						45%	31%	41%	35%	17%	32%	85%	57%	64%

Source: Bloomberg; RTS; Company data; Aton estimates

Conclusion

With this report we have initiated coverage of the major Russian steel plants. At the risk of sounding overly optimistic, we believe that each of our shares profiled deserves a Buy recommendation. Although certain companies do carry a high risk for minority investors, we feel that we have conservatively accounted for this with high discount rates.

Recommendations

Ticker (Bloomberg)	Recommendation
NLMK (Novolipetsk) NFMF	Buy
MMK (Magnitogorsk) MAGN MAGNP	Buy Buy
Severstal CHMF	Buy
NTMK (Nizhnetagil) NTMK	Buy
ZSMK (Zapsib) ZSMK ZSMKP (no ticker)	Buy NA

Source: Aton estimates

MMK

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
MAGN	Buy	\$0.20	\$0.24	19%
MAGNP	Buy	\$0.12	\$0.18	49%

Capitalization & stock data	Common	Pref.	IAS Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	1,595	319	Revenue	1,733	2,065	2,784	2,741
Net debt (cash), \$ mn	133		EBITDA	312	465	998	810
EV, \$ mn	2,046		Net income	144	115	577	449
Shares out., mn	7,973	2,658	Operating cash flow	267	212	776	721
Free float, (est)	6%	NA	Valuation				
Dividend, \$ (2002)	0.0003	0.0011	EV/EBITDA	6.6	4.4	2.1	2.5
Dividend yield	0.16%	0.92%	P/E	13.3	16.6	3.3	4.3
			P/CF	7.2	9.0	2.5	2.7
			P/Book	1.2	1.1	0.8	0.7

Source: Company data; Aton estimates

DCF model

In \$ mn	2003F	2004F	2005F	2006F	2007F	2008F	2009F	2010F
Revenue	2,784	2,741	2,726	2,683	2,727	2,769	2,830	2,910
Operating expenses	1,786	1,931	2,034	2,139	2,231	2,305	2,384	2,457
EBITDA	998	810	693	544	496	463	446	453
Depreciation	242	254	263	272	280	286	292	300
Operating income (EBIT)	755	556	429	272	216	177	154	153
Less: Income taxes	-181	-133	-103	-65	-52	-43	-37	-37
Less: Capex	-180	-180	-100	-145	-105	-80	-90	-160
Less: Changes in WC	-43	17	10	14	1	0	-3	-6
Plus: Depreciation	242	254	263	272	280	286	292	300
Free cash flow	593	514	500	348	340	341	316	251
Discount factor (WACC)	1.000	1.188	1.435	1.734	2.095	2.531	3.058	3.694
Present value of future FCF	593	433	348	201	162	135	103	68
Total PV of future FCF		2,043						

Calculation of terminal value

Terminal free cash flow, \$ mn	251
Terminal growth rate	5%
Terminal discount rate	18.8%
Terminal value, \$ mn	1,917
PV of terminal value, \$mn	519

Target price calculation

PV of terminal value + future FCF, \$ mn	2,562
Less: Net debt (cash), \$ mn	-133
Less: Minority interest, \$ mn	-50
Total company NPV, \$ mn	2,379
Common shares outstanding, mn	7,973
Preferred shares outstanding, mn	2,658
Target common-preferred ratio	0.75
Common equivalent shares out., mn	9,966
Fair value per common share	\$0.24

Cost of equity calculation

Long term risk free rate	6.0%
Russian country risk premium	2.5%
Russian risk free rate	8.5%
Standard equity premium	4.0%
Excess RTS volatility factor (2002)	1.20
Russian equity market premium	4.8%
Forecast beta	2.25
Levered forecast beta	2.57
Cost of equity	20.8%

WACC calculation

	Terminal
Gross debt as % of capitalization	15.6%
Cost of debt (after-tax)	7.6%
Equity as % of capitalization	84.4%
Cost of equity	20.8%

WACC

18.8%

Capital structure (as of 31/01/03 date), \$ mn

Gross debt	355
MV of common	1,595
MV of preferred	319
Total MV of equity	1,913
Total capitalization, \$ mn	2,268

Source: Company data; Aton estimates

Severstal

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
CHMF	Buy	\$108.00	\$127.64	18%

Capitalization & stock data	Common	IAS Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	2,387	Revenue	2,009	2,271	2,969	2,943
Net debt (cash), \$ mn	-11	EBITDA	293	512	1,105	925
EV, \$ mn	2,376	Net income	-15	189	661	534
Shares out., mn	22.1	Operating cash flow	295	417	731	788
Free float, (est)	9%	Valuation				
Dividend, \$ (2002)	2.32	EV/EBITDA	8.1	4.6	2.2	2.6
Dividend yield	2.15%	P/E	NM	12.6	3.6	4.5
		P/CF	8.1	5.7	3.3	3.0
		P/Book	1.1	1.0	0.8	0.7

Source: Company data; Aton estimates

DCF model

In \$ mn	2003F	2004F	2005F	2006F	2007F	2008F	2009F	2010F
Revenue	2,969	2,943	2,934	2,848	2,899	2,929	2,978	3,046
Operating expenses	1,864	2,017	2,149	2,271	2,386	2,482	2,592	2,694
EBITDA	1,105	925	785	577	512	447	386	352
Depreciation	230	248	259	267	274	280	286	292
Operating income (EBIT)	875	677	526	310	239	166	99	60
Less: Income taxes	-210	-162	-126	-74	-57	-40	-24	-14
Less: Capex	-363	-190	-140	-100	-100	-90	-90	-90
Less: Changes in WC	-160	5	1	24	-17	-11	-16	-22
Plus: Depreciation	230	248	259	267	274	280	286	292
Free cash flow	372	578	520	427	338	306	255	225
Discount factor (WACC)	1.000	1.155	1.341	1.557	1.808	2.099	2.438	2.830
Present value of future FCF	372	500	387	274	187	146	105	80

Total PV of future FCF	2,051
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Calculation of terminal value

Terminal free cash flow, \$ mn	225
Terminal growth rate	5%
Terminal discount rate	15.5%
Terminal value, \$ mn	2,251
PV of terminal value, \$mn	795

Target price calculation

PV of terminal value + future FCF, \$ mn	2,846
Less: Net debt (cash), \$ mn	11
Less: Minority interest, \$ mn	-36
Total company NPV, \$ mn	2,821
Common shares outstanding, mn	22
Preferred shares outstanding, mn	0
Target common-preferred ratio	0.75
Common equivalent shares out., mn	22
Fair value per common share	\$127.64

Cost of equity calculation

Long term risk free rate	6.0%
Russian country risk premium	2.5%
Russian risk free rate	8.5%
Standard equity premium	4.0%
Excess RTS volatility factor (2002)	1.20
Russian equity market premium	4.8%
Forecast beta	1.50
Levered forecast beta	1.58
Cost of equity	16.1%

WACC calculation

	Terminal
Gross debt as % of capitalization	6.9%
Cost of debt (after-tax)	7.6%
Equity as % of capitalization	93.1%
Cost of equity	16.1%
WACC	15.5%

Capital structure (as of 31/01/03 date), \$ mn

Gross debt	178
MV of common	2,387
MV of preferred	0
Total MV of equity	2,387
Total capitalization, \$ mn	2,565

Source: Company data; Aton estimates

NLMK

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
NFMF	Buy	\$315.00	\$516.56	64%

Capitalization & stock data	Common	GAAP Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	1,890	Revenue	1,322	1,712	2,199	2,060
Net debt (cash), \$ mn	-384	EBITDA	350	618	1,055	824
EV, \$ mn	1,506	Net income	88	338	710	539
Shares out., mn	6.0	Operating cash flow	215	497	772	729
Free float, (est)	4%	Valuation				
Dividend, \$ (2002)	9.83	EV/EBITDA	4.3	2.4	1.4	1.8
Dividend yield	3.12%	P/E	21.6	5.6	2.7	3.5
		P/CF	8.8	3.8	2.4	2.6
		P/Book	1.1	0.9	0.7	0.6

Source: Company data; Aton estimates

DCF model

In \$ mn	2003F	2004F	2005F	2006F	2007F	2008F	2009F	2010F
Revenue	2,199	2,060	2,026	1,963	1,994	2,024	2,062	2,110
Operating expenses	1,144	1,236	1,305	1,375	1,447	1,504	1,564	1,622
EBITDA	1,055	824	720	589	547	520	498	488
Depreciation	153	168	183	196	204	211	217	224
Operating income (EBIT)	902	656	537	393	343	309	281	264
Less: Income taxes	-216	-158	-129	-94	-82	-74	-67	-63
Less: Capex	-215	-225	-230	-150	-100	-100	-100	-100
Less: Changes in WC	-91	23	3	9	-9	-9	-10	-12
Plus: Depreciation	153	168	183	196	204	211	217	224
Free cash flow	533	464	365	353	355	337	320	313
Discount factor (WACC)	1.000	1.181	1.395	1.648	1.946	2.299	2.716	3.208
Present value of future FCF	533	393	261	214	183	147	118	98
Total PV of future FCF		1,946						

Calculation of terminal value

Terminal free cash flow, \$ mn	313
Terminal growth rate	5%
Terminal discount rate	18.1%
Terminal value, \$ mn	2,509
PV of terminal value, \$mn	782

Target price calculation

PV of terminal value + future FCF, \$ mn	2,728
Less: Net debt (cash), \$ mn	384
Less: Minority interest, \$ mn	-13
Total company NPV, \$ mn	3,099
Common shares outstanding, mn	6
Preferred shares outstanding, mn	0
Target common-preferred ratio	0.75
Common equivalent shares out., mn	6
Fair value per common share	\$516.56

Cost of equity calculation

Long term risk free rate	6.0%
Russian country risk premium	2.5%
Russian risk free rate	8.5%
Standard equity premium	4.0%
Excess RTS volatility factor (2002)	1.20
Russian equity market premium	4.8%
Forecast beta	2.00
Levered forecast beta	2.01
Cost of equity	18.1%

WACC calculation

	Terminal
Gross debt as % of capitalization	0.3%
Cost of debt (after-tax)	7.6%
Equity as % of capitalization	99.7%
Cost of equity	18.1%
WACC	18.1%

Capital structure (as of 31/01/03 date), \$ mn

Gross debt	6
MV of common	1,890
MV of preferred	0
Total MV of equity	1,890
Total capitalization, \$ mn	1,896

Source: Company data; Aton estimates

Evrazholding (NTMK and ZSMK)

Ticker (Bloomberg)	Recommendation	Current price	Fair Value	Upside / Downside
NTMK	Buy	\$0.35	\$0.85	142%
ZSMK	Buy	\$35.00	\$78.01	123%
ZSMKP (no tickers)	NA	NA	\$58.51	NA

Capitalization & stock data		IAS Financials, \$ mn	2001	2002	2003F	2004F
Market cap, \$ mn	1,053	Revenue	2,083	2,064	2,928	3,025
Net debt (cash), \$ mn	414	EBITDA	180	410	1,071	1,026
EV, \$ mn	1,467	Net income	173	233	669	666
Shares out., mn	0.0	Operating cash flow	65	264	725	831
Free float, (est)	NM	Valuation				
Dividend, \$ (2002)	NM	EV/EBITDA	8.1	3.6	1.4	1.4
Dividend yield	NM	P/E	6.1	4.5	1.6	1.6
		P/CF	16.2	4.0	1.5	1.3
		P/Book	3.2	2.4	0.9	0.6

*Note: this is the combined market cap of NTMK and ZSMK

Source: Company data; Aton estimates

DCF model

In \$ mn	2003F	2004F	2005F	2006F	2007F	2008F	2009F	2010F
Revenue	2,928	3,025	2,926	2,804	2,854	2,884	2,932	2,999
Operating expenses	1,857	1,999	2,106	2,214	2,324	2,411	2,504	2,591
EBITDA	1,071	1,026	820	590	530	472	428	409
Depreciation	169	178	188	197	205	211	218	225
Operating income (EBIT)	902	848	632	393	326	261	210	184
Less: Income taxes	-217	-204	-152	-94	-78	-63	-50	-44
Less: Capex	-136	-150	-150	-120	-100	-100	-100	-100
Less: Changes in WC	-113	-13	15	18	-7	-4	-6	-9
Plus: Depreciation	169	178	188	197	205	211	218	225
Free cash flow	605	660	533	394	346	306	271	255
Discount factor (WACC)	1.000	1.201	1.471	1.801	2.206	2.701	3.308	4.051
Present value of future FCF	605	549	362	219	157	113	82	63

Total PV of future FCF	2,151
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Calculation of terminal value

Terminal free cash flow, \$ mn	255
Terminal growth rate	5%
Terminal discount rate	20.1%
Terminal value, \$ mn	1,775
PV of terminal value, \$mn	438

Target price calculation

PV of terminal value + future FCF, \$ mn	2,589
Less: Net debt (cash), \$ mn	-414
Less: Minority interest, \$ mn	-139
Total company NPV, \$ mn	2,036
Common shares outstanding, mn	NM
Preferred shares outstanding, mn	0
Target common-preferred ratio	0.75
Common equivalent shares out., mn	NM
Fair value for enterprise	\$2,036

Cost of equity calculation

Long term risk free rate	6.0%
Russian country risk premium	2.5%
Russian risk free rate	8.5%
Standard equity premium	4.0%
Excess RTS volatility factor (2002)	1.20
Russian equity market premium	4.8%
Forecast beta	2.50
Levered forecast beta	2.91
Cost of equity	22.5%

WACC calculation

	Terminal
Gross debt as % of capitalization	17.7%
Cost of debt (after-tax)	9.1%
Equity as % of capitalization	82.3%
Cost of equity	22.5%
WACC	20.1%

Capital structure (as of 31/01/03 date), \$ mn

Gross debt	430
MV of common	2,000
MV of preferred	0
Total MV of equity	2,000
Total capitalization, \$ mn	2,430

Source: Company data; Aton estimates

Subsidiary valuation

Evrazholding is not a single legal entity that is publicly quoted. However, Evrazholding as of the end of 2002 was comprised of two main steel mills, NTMK and ZSMK, and several trading arms, which primarily traded the steel of its two steel mill subsidiaries. Because value is not concentrated at the steel mills themselves, their financial statements do not reflect the true financial picture. We therefore have valued Evrazholding as a whole, stripped out the debt at the trading firm levels, and used the remaining number as the enterprise value for the two mills. We have then assigned a weighting to both NTMK and ZSMK according to their production, capacity, PP&E and net assets to arrive at each mill's weight in the overall Evrazholding value.

Sum of the parts: no other meaningful way

	Evrazholding	NTMK	ZSMK
Production, mn tons 2002			
Raw steel, mn tons	11.0	5.3	5.7
Rolled steel, mn tons	9.7	4.7	5.0
Relative value to Evrazholding	100%	48%	52%
Capacity, mn tons			
Raw steel, mn tons	13.3	5.3	8.0
Rolled steel, mn tons	11.8	6.2	5.6
Relative value to Evrazholding	100%	46%	54%
Product sold, mn tons 2002	9.7	4.7	5.0
Relative value to Evrazholding	100%	48%	52%
PP&E, \$mn 2002	985	587	398
Relative value to Evrazholding	100%	60%	40%
Net assets, \$mn 2002		584.2	430
Relative value to Evrazholding	100%	58%	42%
Average weight		52%	48%
EV (after net debt at trading company level)	2,409	1,252	1,157
Debt		-143.8	-124
Equity value		1,108	1,033
Shares outstanding			
Common shares, mn		1,310.0	12.8
Preferred shares, mn		0.0	0.6
Target common-preferred ratio		0.75	0.75
Common equivalent shares out., mn		1,310.0	13.2
Fair value per common share		0.85	78.01

Source: Company data; Aton estimates

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