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WSD's steel experience, steel database and availability of steel statistics are the principles for performing steel forecasts, studies and analysis for international clients. WSD seeks to understand how the "pricing power" of steel companies the world over will be impacted by changes in the steel industry's structure.

The views and opinions expressed in this article are solely those of World Steel Dynamics and not necessarily those of AIST.

## Authors



**Peter Marcus**  
managing partner,  
World Steel Dynamics  
pmarcus@worldsteeldynamics.com  
+1.201.503.0902



**Adam Green**  
director of research,  
World Steel Dynamics  
agreen@worldsteeldynamics.com  
+1.201.503.0916



**John Villa**  
research strategist,  
World Steel Dynamics  
jvilla@worldsteeldynamics.com  
+1.201.503.0911

## Breakthrough technology a double-edged sword: workers in manufacturing sector among those threatened

WSD has been amazed by the extent to which the Information Revolution has spurred the steel industry's technological revolution and adjustment process. The invisible hand, no doubt, is moving at warp speed. Changes and adjustments that 25 years ago might have taken a decade to accomplish are now occurring in just a few years.

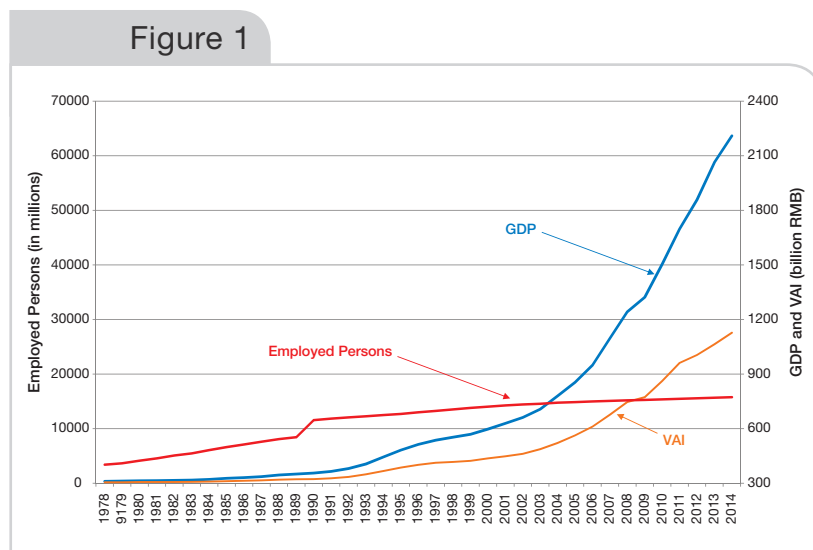
Presented here are two examples with regard to the technological revolution that have a downside for: (1) workers seeking employment no matter where they are located; and (2) capital investment in the developing world versus the advanced countries.

Figure 1 shows that gains in labor productivity have been so substantial in China since 1978 that the rise in employment in

the country has been muted. On a current RMB basis, GDP from 1978 to 2014 grew 15.4% per year compounded and value added by industry expanded 15.1% per year compounded. Yet, the number of workers in China rose only 1.8% per year to about 773 million in 2014 from 402 million in 1978. In fact, from 2000 to 2014, the gain was just 0.5% per year.

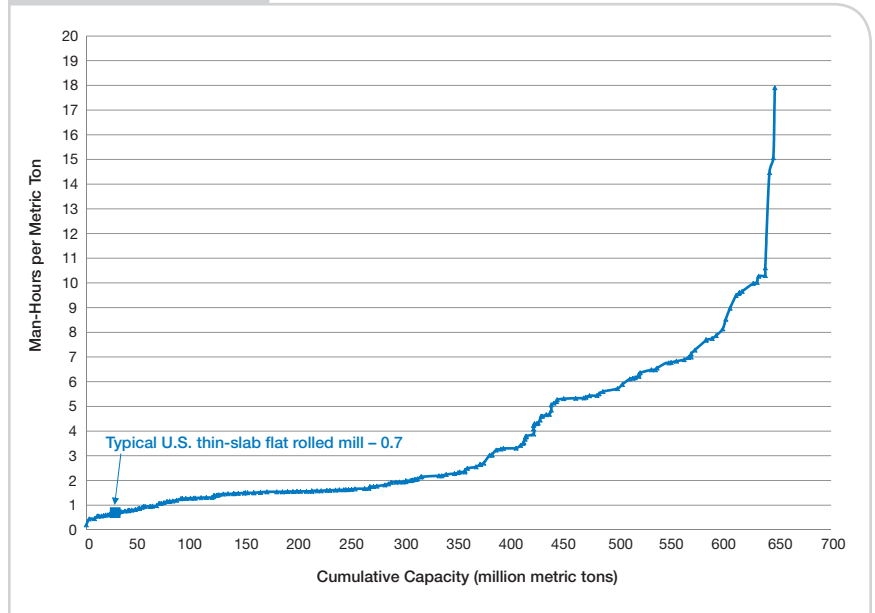
What's the consequence of this? Governmental policymakers in many countries are likely to become even more determined to boost manufacturing activity in order to increase employment since it's not easy to stimulate a growth of employment in services. A surge in government employment is a double-edged sword. Of course, one way to stimulate

Figure 1



China's current GDP, value-added industry (VAI) and employed persons (billion RMB, million persons).

Figure 2



Man-hours per metric ton through hot rolled band with overhead for April 2015. Source: WSD April 2015 World Cost Curve for plants making hot rolled band.

manufacturing activity is to engage in protectionism — one of the key elements of mercantilism — in order to provide higher prices and profits for domestic manufacturers.

Figure 2 shows the man-hour content of a steel plant in the United States to produce hot rolled band via the thin-slab continuous casting approach. What's evident is the incredible reduction in the man-hour requirement for this type of plant versus a traditional integrated one. If we generalize the consequences of this development, WSD submits that the new manufacturing plants of many types are now more attractive to be built in the advanced countries, and particularly in the United States, than in the developing world when considering: (a) the low man-hour content, (b) global sourcing, (c) less country risk, (d) larger markets including sizable ones for higher-end products, (e) good transportation systems, and (f) low energy prices (especially in the U.S.).

New investment opportunity in the developing world ex-China is being leap-frogged because of the technological

revolution. The flow of offshore funds for new manufacturing plants to the developing world ex-China will likely be less than expected in the decade ahead.

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