

How does automatization affect unemployment and peoples' economic condition?

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ABSTRACT

In this era of automation technology, day by day, robots continue to take place in the community. For example, at some of the cafes in some countries(Germany, Japan, Korea, etc.) people may see robot waiters or may encounter some auto cars. Most people think that these robots in daily life are good for developing a better and improved country. But there are some opinions that support the idea of robot workers will get human jobs for themselves and people, especially workers at factories will suffer unemployment. Due to this unemployment problem, the gap between the rich and the poor will be deeper. But for one country's economy, there is a chance that robots may be able to make a different effect. It is Japan. For the last few years, Japan's population has decreased due to its death rates. At the present time, deaths outnumber births by 1000 people per day in Japan. Therefore, Japan's labor force had a drastic decrease. That is why searchers and scientists think that robots may be the key to solve Japan's secular stagnation. Because Japan's robot industry is one of the most improved and big industries in the world. They may have enough robotic outputs for the decrease of the labor force, and then they can rewind and even increase their outcome for the next upcoming years.

Keywords: *Economy, Industry, Japan, Labor, Robot*

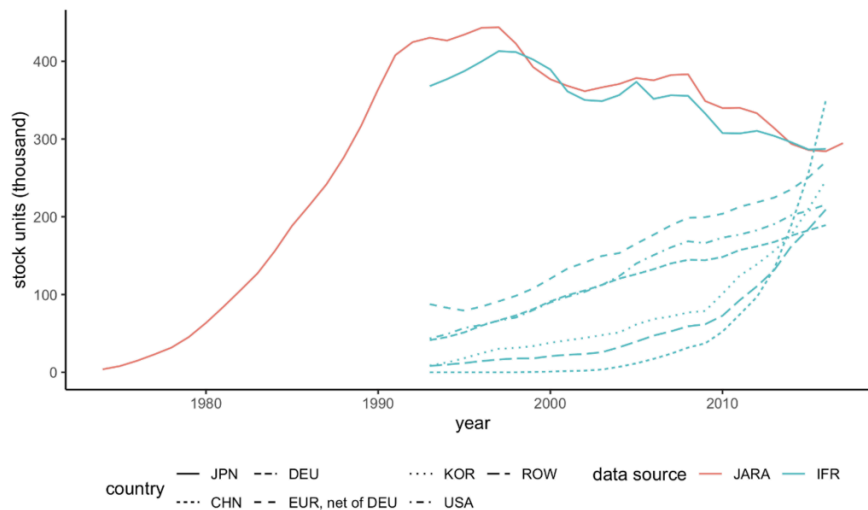
1. Introduction

Japan. A country which hasn't got much place for farming or industries but still manages to be one of the biggest economic powers in the world. A country where there is only 2% of unemployment in 2019. Where the population isn't much and keeps decreasing 1000 people per day due to death rates' excess. Where the labor force is decreasing due to a decrease in the population of workers who are between the ages of 15-64. And robots machines that are used in sectors like industry and proved to be useful. Machines that can learn, think and proceed according to its thinking. Machines that can close and open jars or take lives. While the robot workers are increasing, new technologies are continuously being more and more developed and thus intelligent. And these two topics symphony with each other. While the labour force in Japan keeps decreasing, can robots fill the gap of workers or will Japan's economy become smaller and smaller by the day?

Robotics and Labour Force

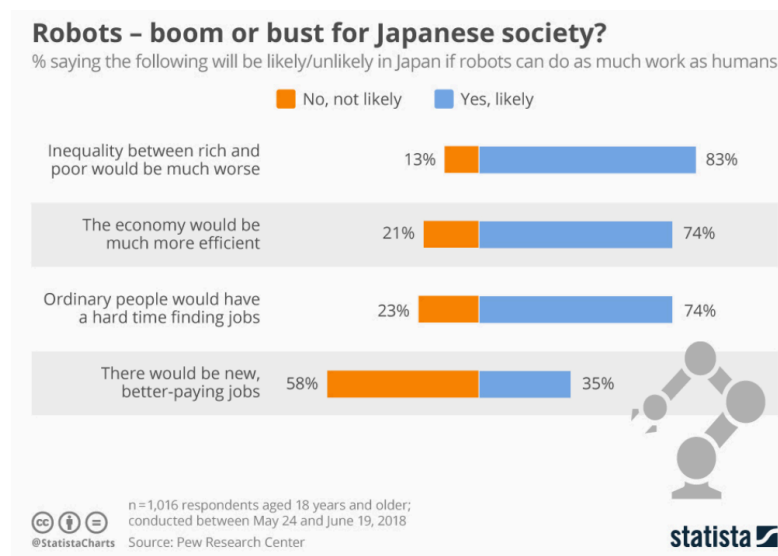
Let's have a look at the general effects of robots in industry and countries that use them.

Figure 1. Robot stocks by countries



Source: VOXEU

As you can see in Figure 1 robot stocks have had a drastic increase in the late 2000s. Therefore it is not wrong to say that an autonomous future is closer than we think. Moreover, it seems like Japan, Germany, China, and Korea are moving forward faster than the other countries hence, these countries will probably lead the autonomous industry in the close future. But in some countries people don't think that these robots will have a positive impact on their lives, as a matter of fact, they believe that this future will cause drastic damages for unemployment problems. In sectors like industry or farming, human power is essential. Thus, people need to work in those sectors. They need to plant crops by hand, they need to close jars by hand, they need to check for errors in the system etc. But day by day these sectors, slowly but surely, are getting in the hands of robots. An analysis made by Oxford Economics shows that in 2030 20 million manufacturing jobs could be replaced by robots. Hence, workers in these sectors will be redundant and probably dismissed from their workplace. Henceforth, unemployment rates may increase and the gap between the rich and the poor would get deeper and deeper by every robot worker. But these robots may work more efficiently than humans. They don't break, they don't need meals, they just need electricity to work. That is why these robots can be used in the factories and these robots are going to increase the productivity and thus labour force while damaging the income of the workers.

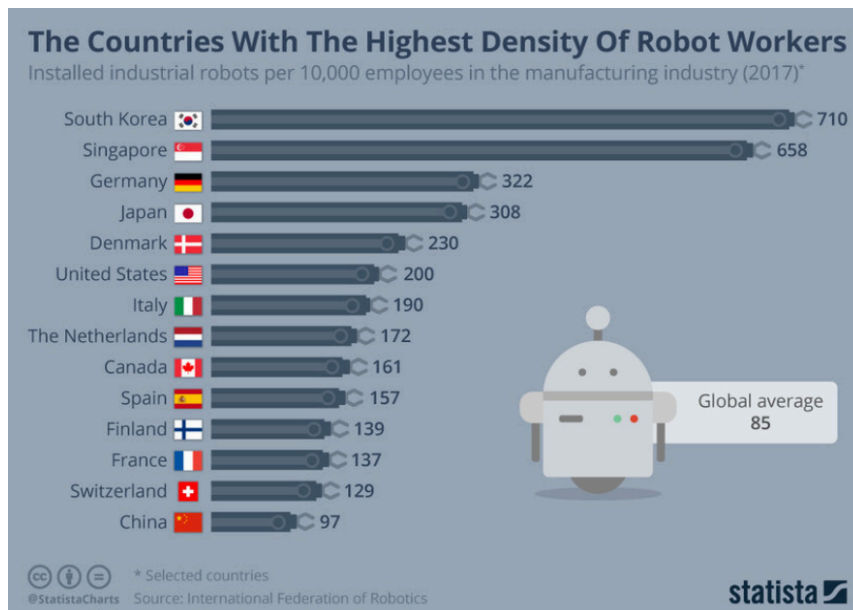
Figure 2. Survey about robots and unemployment

Source: Statista

Here in this survey, you can see that Japanese people consider robots as a thread for their jobs and equality but as an efficient way to improve their economy.

Robots and Japan

If you are going to talk about a relationship it is always good to start from the beginning. And we are going to start from the beginning too. During the Edo Period of Japan, mechanical dolls were invented. A Japanese inventor, Takeda-za, developed a mechanical theater. A genius, who has the nickname of “Japan’s Edison” and named Tanaka Hisashige, created some extraordinary dolls that can shoot arrows from a quiver, serve drinks, and paint a Japanese kanji. The first robot in the east, Gakutensoku, was designed in 1928 by Makoto Nishimura. After some more production of robots, a company named Kawasaki Robotics started the production of robots in the 1980s. After this, Japan continued to export robots and in 1995, there were 700.000 robots in the whole world and 500.000 of those robots were manufactured by Japanese companies. And in 2012, there were between 1,235,000 and 1,500,000 robots that were in usage. In conclusion, Japan has one of the longest-standing past with robots. Here is some robotic companies from Japan that you may have heard of: Sony Corporation, Honda, Toyota, Toshiba, Nissan, Mitsubishi Electric Automation.

Figure 3. The Countries With The Highest Density Of Robot Workers

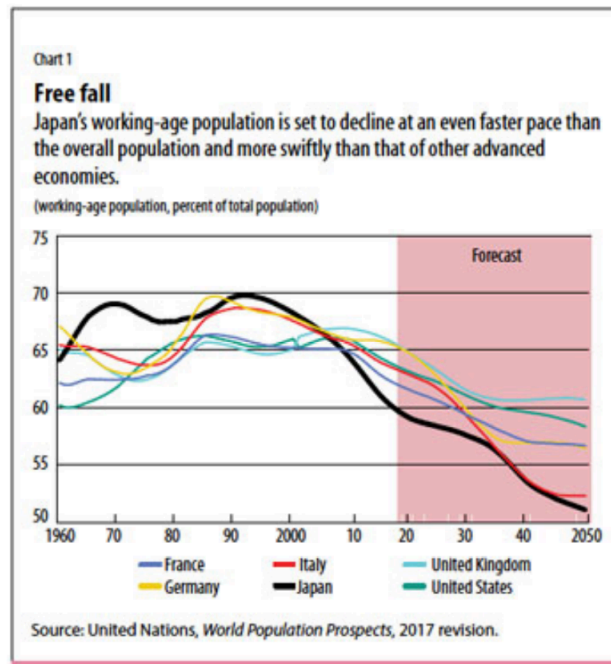
Source: Statista

In figure 3, you can see that Japan is the world's 4th in robot worker ratio. In 2017, International Federation of Robotics (IFR) published a research report that states Japan's manufacturers deliver 52 percent of the global supply. In 2016, Japan exported a total of nearly 115.000 industrial robots which has a value of 309 billion yen (about US\$ 2.7 billion). This was the highest export volume for one year. Japan's import was nearly 1 percent of the installations thus foreign suppliers couldn't reach high sales of volume in Japan. Also IFR and Japanese Robot Association (JARA) expects an increase of around 10 percent in 2017 and between 2018 and 2020 they expect 5 percent of increase.

Labour force of Japan

In 2017, Japan's estimated population fell by a record-breaking 264.000 people. Right now deaths outnumber births by 1000 people per day. Japan's birth rates are lesser than the expected (while normally 2.1 by woman needed to grow japan is at 1.4) and unlike some other countries immigrants are not enough to fill this gap. In 2015 nearly 30% of Japanese citizens were older than 65 and it is estimated that it will increase to 40% in 2050. The Population Division of the UN Department of Economic and Social Affairs published a research report that shows Japan's population will decrease by 34% by the end of the 21s. The people's who are Japan's domestic labour force (ages 15-64) will decline even faster than the overall population, decreasing 24 million people by 2050.

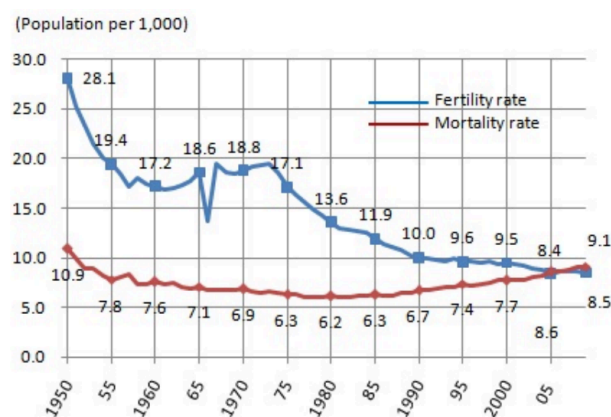
Figure 4. Working age rates in countries



Source: IMF

Here in figure 4, you can see that Japan’s work age is estimated to decrease faster than the other countries’. This leads to a shrinking labour force by years due to the decrease in the population of labour force.

Figure 5. Fertility and mortality rates in Japan



Source: Nursing in Japan

But in late 2019, due to the encouragement that made women employment, Japan’s shrinking economy had a brief stop. But with the birth and the death rates continuing as shown in the figure 5, it will not be that much of a help in the future.

Conclusion

In conclusion, the robotic sector and usage of robots have been increasing in some developed countries such as Germany and Japan. But as we discussed, this rise in the robots and automation sector expected to damage the employment rates, especially in the sectors of industry. But they are expected to increase the general labour force. But in Japan, there is a different melody that is going on. In the last few years, Japan's working age has been decreasing in a fast pace due to the fact that death rates outnumber birth rates by 1000 death per day. Hence Japan's labour force has been going down too due to lack of workers. And if the flow continues like right now, it is estimated that in 2050 Japan will lost 24 million workers who are between the ages of 15-64. The robots that are the main character of our story too are rising and keep rising like death rates. Since the Edo Period Japan has continued to take place in the robotics sector and right now Japanese manufacturers deliver 52% of the world's global supply. In these manufacturers there are some famous ones that you may have heard of such as: Sony, Toshiba, Toyota etc. In conclusion, Japan is clearly one of the biggest robotic manufacturer in the world. A survey has been conducted in Japanese people showed that 74% of the people agree that the economy would be more efficient but 83% of the people think that the gap between the rich and the poor will be larger. But as we said Japan's labour force is shrinking right now and the robotics sector may be the key for stopping this shrinking while filling the lack of workers. Finally, in the future, these robots can and will take place in every field and this means that, most of the people will get unemployed and most of the world's population will suffer great consequences due to the gap between the rich and the poor. Also, jobs that need to be done by only human force will probably be forgotten in the depths of the history books. But for today's Japan, most of the researchers think that robots will be efficient and helpful to protect the economy from shrinking.

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