

(Box 1) Monitoring Indicators of Export Conditions

There are high uncertainties regarding overseas economies and vigilance continues to be warranted. Looking at developments in exports and production or corporate surveys such as the business conditions DI, the impact on Japan's economy of uncertainties regarding overseas economies including protectionist moves can be judged as still limited.³⁵ However, it also is true that interviews on firms conducted by the Bank's Head Office, branches, and local offices reveal their growing concern about overseas economies.³⁶

Against this background, the Bank has developed the SCOPE (Surveillance Indices for Critical Overseas Perils to Exports) indicator to comprehensively monitor export conditions. Similar to the Financial Activity Indexes used in the Bank's *Financial System Report*, SCOPE visualizes the possibility of a significant decrease in real exports.

Specifically, in the first step, about 250 economic indicators were collected as candidates. Next, an optimal threshold value was calculated for each indicator such that it would have predicted significant decreases observed in the past. This calculation is based on the assumption that an

³⁵ For the impact of uncertainties regarding overseas economies including protectionist moves, see Box 1 in the October 2018 Outlook Report, which discusses points to check when assessing whether risk scenarios originating from overseas economies have materialized.

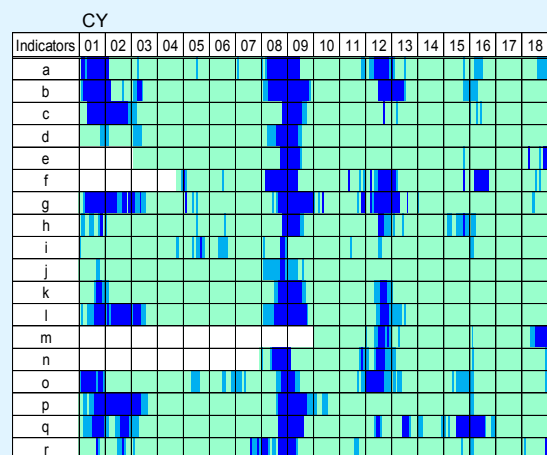
³⁶ Some of these interviews on firms are summarized in the January 2019 *Regional Economic Report*.

Chart B1-1: Monitoring Indicators

Indicators		
World		
Corporate	a	Global Manufacturing PMI: New export orders index
	b	OECD Business Confidence Index
	c	WSTS World Semiconductor Shipments
Household	d	OECD Consumer Confidence Index
	e	World vehicle sales
Japan		
Corporate	f	Nikkei Japan Manufacturing PMI: New export orders index
	g	Machinery Orders (from overseas): Electronic and communication equipment
U.S.		
Corporate	h	ISM Manufacturing Index: New export orders index
	i	Philadelphia Fed Manufacturing Business Outlook Survey: Future shipments
Household	j	University of Michigan Surveys of Consumers: Current economic conditions
Euro Area		
Corporate	k	Business Climate Indicator: Industry, production expectations
	l	Business Climate Indicator: Services sector, demand expectations
Asia		
Corporate	m	Output of Metal Shaping Machinery in China
	n	China Manufacturing PMI
Overall	o	Taiwan National Development Council's Monitoring Indicators: Total score
Financial Markets	p	MSCI World Index
	q	MSCI Emerging Markets Index
	r	VIX Index

Note: The Global Manufacturing PMI is the "J.P. Morgan Global Manufacturing PMI."

Chart B1-2: Heat Map regarding Export Conditions



Sources: Haver; Bloomberg; Cabinet Office; WSTS; IHS Markit (© and database right IHS Markit Ltd 2019. All rights reserved.)
 Notes: 1. The heat map visualizes the possibility of a significant decrease in real exports by depicting indicator values relative to their respective threshold values. Based on staff calculations.
 2. Shaded areas in the chart represent the following for an indicator relative to the threshold set for the indicator: (1) areas shaded in dark blue indicate that the indicator is above the threshold value; (2) areas in light blue indicate that the indicator lies between the threshold value and half of the threshold value; (3) areas in green indicate that the indicator lies below half of the threshold value; and (4) areas in white indicate that no data are available.

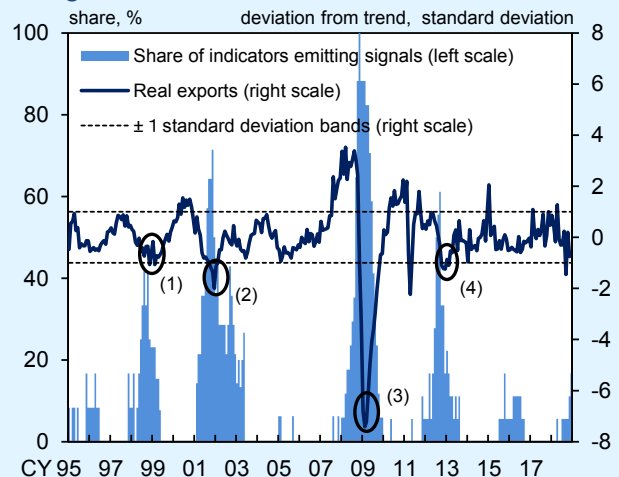
indicator signals the possibility of a significant decrease in real exports in the near future if it deteriorates beyond a certain threshold value from its trend. Lastly, 18 indicators with superior predictive performance were selected while ensuring that a wide range of regions are covered (Chart B1-1).

A heat map regarding export conditions, which summarizes developments in the signals emitted by the selected 18 indicators, shows that many of the indicators emitted signals in 2001, when the dot-com bubble collapsed, and in 2008, when the global financial crisis occurred (Chart B1-2). Looking at the share of indicators sending out signals, a rise can be observed particularly during the global financial crisis, and also at the time of the collapse of the dot-com bubble, as well as in 2012, when the European debt problem became serious (Chart B1-3).

Looking at the current situation, the share of indicators emitting signals remains at a low level. However, indicators such as the Output of Metal Shaping Machinery in China are clearly below their threshold values, and the new export orders index of the Global Manufacturing PMI also has fallen close to the threshold value (Chart B1-4).

Although real exports last summer fell by more than one standard deviation from their trend, none of the indicators signaled this in advance. The likely reason is that the decrease in real exports at that time was due to supply-side constraints that mainly resulted from natural disasters. A similar phenomenon also occurred in the wake of the

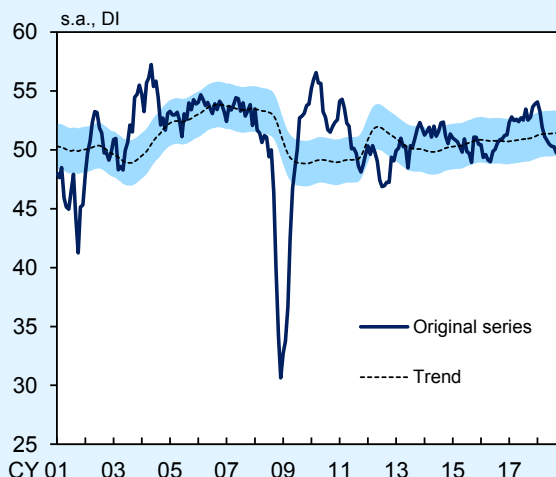
Chart B1-3: Share of Indicators Emitting Signals



Sources: Bank of Japan; Ministry of Finance.
 Note: (1) to (4) indicate periods in which real exports deviated downward from their trend by more than one standard deviation for two months or more in a four-month period.

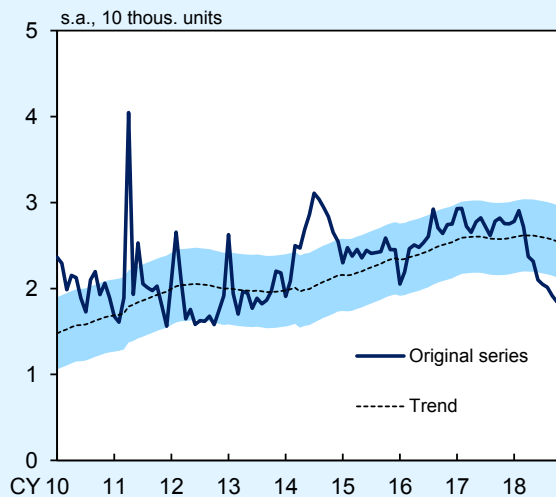
Chart B1-4: Individual Indicators

1. Global New Export Orders PMI



Source: IHS Markit (© and database right IHS Markit Ltd 2019. All rights reserved.)
 Notes: 1. The global new export orders PMI is the new export orders index in the "J.P. Morgan Global Manufacturing PMI."
 2. "Trend" is calculated from the 3-year backward moving average. The shaded area indicates 0.5 times the root mean square of the deviation from the trend.

2. Output of Metal Shaping Machinery in China



Source: Haver.
 Note: "Trend" is calculated from the 3-year backward moving average. The shaded area indicates the root mean square of the deviation from the trend.

Great East Japan Earthquake in 2011. The fact that SCOPE does not emit signals in response to such fluctuations due to supply-side constraints shows that it is a suitable tool for monitoring demand developments in overseas economies.