様　式　Ｃ－１９、Ｆ－１９－１、Ｚ－１９　（共通）

科学研究費助成事業　　研究成果報告書

令和　２ 年　 ６ 月 １５ 日現在

機関番号：３２６８９
研究種目：基盤研究(C)（一般）
研究期間：2017～2019
課題番号：１７Ｋ０３７２８

研究課題名（和文）Was there a structural break in the impacts of exchange rates on the machinery exports of Japan to the US?

研究課題名（英文）Was there a structural break in the impacts of exchange rates on the machinery exports of Japan to the US?

研究代表者
Ｂａａｋ　ＳａａｎｇＪｏｏｎ（Baak, SaangJoon）

早稲田大学・国際学術院・教授

研究者番号：３０３３９９２３

交付決定額（研究期間全体）：（直接経費）　　2,300,000円

研究成果の概要（和文）：2002年から2018年までの期間の推定結果は、1円の円安により日本の輸出価格が0.25%低下することを示している。 ただし、期間全体を2つのサブ期間に分割すると、為替レートの影響に変化があった。 大不況以前（2002年から2017年）では、日本円が1%下落すると、輸出価格は0.38%低下したが、大不況後（2012年から2018年）では、円の影響は有意でなかった。 （p値が88%）この結果は、大不況後、日本の輸出価格円為替レートの影響を受けていないことを示している。

研究結果は、アジア太平洋経済協会の第14回年次会議で発表された。

研究成果の学術的意義や社会的意義
The biggest value-added of the research is that it estimated a structural export model in which both the quantity and the price are dependent variables. The findings of the research show that Japanese exports did not increase after 2002 because export prices did not respond yen's depreciation.

研究成果の概要（英文）：The estimation results for the period from 2002Q1 to 2018Q3 indicate that a 1% depreciation of the Japanese yen reduces the Japanese export price by 0.25%. However, when the whole period is split into two sub-periods, it was found that the impact of exchange rates altered. For the pre-Great recession period (2002Q1 to 2017Q4), a 1% depreciation of the Japanese yen reduces the Japanese export price by 0.38%. On the contrary, for the post-Great recession period (2012Q1 to 2018Q3), the impact of the Japanese yen turned out to be positive but highly insignificant. (The p-value is 88%). Those findings indicate that the machinery export prices decreased as the yen depreciated before the Great Recession, but it was not affected by the yen value after the Great Recession.

The results were presented at the 14th Annual Conference of the Asia-Pacific Economic Association.

研究分野：経済学

キーワード：export prices　yen　exchange rates　structural model　system GMM

様　式　Ｃ－１９、Ｆ－１９－１、Ｚ－１９（共通）

１．研究開始当初の背景

Despite a substantial depreciation of the yen since late 2012, the Japanese export volume has not increased contrary to the expectation of the market. Such a sluggish response of Japanese exports puzzled policy makers and economists because it was a new phenomenon that was not predicted by extant literature which investigated Japanese export functions and/or J-curve.

２．研究の目的

The purposes of this research are three folds: (1) The first is to investigate whether and to what extent exchange rates affect the quantity and the price of machinery exports from Japan to the U.S. by estimating structural export models with highly disaggregated data. (2) The second is to test for a structural break in the impacts of exchange rates. (3) The third is to explain, based on the estimation results and the break test results, why the Japanese export volume has not increased despite the weak yen since the implementation of Abenomics.

３．研究の方法

The present research constructed a new Japanese export model that can accommodate those hypotheses and trace changes in the impacts of exchange rates. The new model utilized the findings of the previous papers such as Baak (2011), Ando et al. (2012), Chinn (2013), Thorbecke, (2014), and Baak et al. (2015) that also explored the Japanese export dynamics. However, the biggest value-added of the new model is that it is a structural model in which both the export quantity and the export price are dependent variables, while the previous papers employ a reduced-form equation in which the export volume is the only dependent variable. By employing a structural model, we can examine the dynamics of export quantity and price separately.

The system of simultaneous equations obtained from the structural model was estimated by the system GMM using the software package, Stata. The 10 digit level machinery export data in the sectors of 84, 85 and 87 were used for the estimations of the export equations. The covered period is from 2002Q1 to 2018Q3.

４．研究成果

The system GMM estimation results for the period from 2002Q1 to 2018Q3 indicate that a 1% depreciation of the Japanese yen reduces the Japanese export price by 0.25%. The p-value of the coefficient is 0.00, implying that the estimate is highly significant.

However, when the whole period is split into two sub-periods, it was found that the impact of exchange rates altered. For the pre-Great recession period (2002Q1 to 2017Q4), a 1% depreciation of the Japanese yen reduces the Japanese export price by 0.38%. The p-value of the coefficient is 0.00, implying the estimate is highly significant as in the case of the whole period. In addition, the impact of the exchange rate is estimated to be higher for the pre-crisis period than for the whole period.

On the contrary, for the post-Great recession period (2012Q1 to 2018Q3), the impact of the Japanese yen turned out to be positive but highly insignificant. (The p-value is 88%)

Those findings indicate that the machinery export prices decreased as the yen depreciated before the Great Recession, but it was not affected by the yen value after the Great Recession. In addition, the findings imply that Japanese exports did not increase after the Great Recession despite depreciating yen because Japanese export prices were not reduced as the result of yen's depreciation.

５．主な発表論文等

〔雑誌論文〕　計0件

〔学会発表〕　計1件（うち招待講演　0件／うち国際学会　1件）

１．発表者名 SaangJoon Baak
２．発表標題 The impacts of exchange rates on the machinery exports to the US
３．学会等名 Asia Pacific Economic Association（国際学会）
４．発表年 2018年

〔図書〕　計0件

〔産業財産権〕

〔その他〕

―

６．研究組織

	氏名 （ローマ字氏名） （研究者番号）	所属研究機関・部局・職 （機関番号）	備考