[1.]Claudia BRANDSTAETTER, [2.]Daniela WILFINGER

INVESTMENT BEHAVIOUR OF SMALL AND MEDIUM-SIZED ENTERPRISES FOR A SUSTAINABLE ECONOMIC GROWTH AFTER FINANCIAL CRISES

[1-2.]University of Applied Sciences, Institute of Industrial Management, Werk-VI-Straße 46, Kapfenberg, AUSTRIA

Abstract: For a sustainable economic growth of industrial companies constant investments are necessary. Industry 4.0, may be seen as an example for disruptive changes in production, where huge investments in fixed assets have to be considered. Today, companies have to face two contradictory problems: There is a need for a great number of investments, despite the financial situation of companies is limited. Especially small- and medium-sized enterprises (SMEs) suffer from a credit crunch. To reflect these issues, this paper addresses the investment and financing policy of SMEs based on an empirical study. It considers different financing possibilities and offers different measures for sustainable business results.
Keywords: investment behavior, financial policy, sustainable economic growth

1. INTRODUCTION

The Austrian economy is dominated by small and middle sized companies (SMEs): 98% of all Austrian businesses, this means 323.600 companies, generate 64% revenues and employ 67% dependent employees, which corresponds to 1.9 million jobs in 2012. [1] There is the same picture in Europe: The vast majority (99.8%) within the EU-28s was SMEs – 22.3 million employees have been working in this size class in 2012. [2] Great international competition for these companies is obvious, a sustainable and focused investment policy is one success factor to secure its long-term success.

Considering the economic crisis of 2007 and beyond the weak economic situation, companies are facing troubles in financing their necessary investments. [3] E.g. the regulations for obtaining a bank loan have changed – in particular higher sureties are required. These guarantees are often not applicable, especially for small firms, and are responsible for investment inhibitions and a back-up of capital. Subsequently corporate growth is inhibited and therefore the future existence of the company is endangered.

The following article attempts to demonstrate,

- the extent to which the financing conditions have changed for SMEs since the beginning of the financial crisis (section 2),
- whether specific investment calculation procedures are used for investments made to make decision-making due to I 4.0 (section 3),
- whether SMEs are taking advantage of the I 4.0 opportunities and are increasingly using public funding (section 4).

In order to answer these central questions a survey was conducted from FH JOANNEUM Kapfenberg, Industrial Management during winter term 2015/2016. Within this survey 3.650 industrial companies in the field of mechanical engineering and metal production have been consulted, the rate of return without considering the incomplete forms, was 16.7% (n=610). For further evaluations the SME definition of the European Union was used, whereas the number of employees was considered as the only criterion. [4]

2. FINANCING TERMS AFTER FINANCIAL CRISIS

There are several ways to finance an investment. Basically a distinction can be drawn between internal and external financing. External financing can be further subdivided into equity and external financing. Due to limited access to the capital market, credit is the most common form of external financing for SMEs. [5]

Concerning debt financing, the financing terms since the financial crisis in 2007 have intensified due to the provisions of Basel III. For example, under Basel III, capital was more strictly defined for banking institutions, a leverage ratio was introduced and liquidity standards were defined [6, 7]. Especially the increased capital requirements for banks can have a negative impact on companies when they try to get a loan.

To verify the assumption that the financing conditions for loan-applicants in the SME sector worsened their situation after the financial crisis in 2007, several topics influencing the perception of financing terms were

presented to the surveyed companies. These topics should be assessed according to their development over time: 73.6% of the interviewees stated that the documentation and information specifications have deteriorated further. This results from the fact that Basel III lead to a bank internal rating of the loan-applicant which means additional documentation requirements. More than 50% of the companies surveyed indicated that the development of terms, ancillary costs and requirements had deteriorated or worsened. The situation is different in the case of the disclosure of the business process and the period of processing/implementation. Here, the majority indicated that these factors are better or much better. Figure 1 summarizes the essential features.

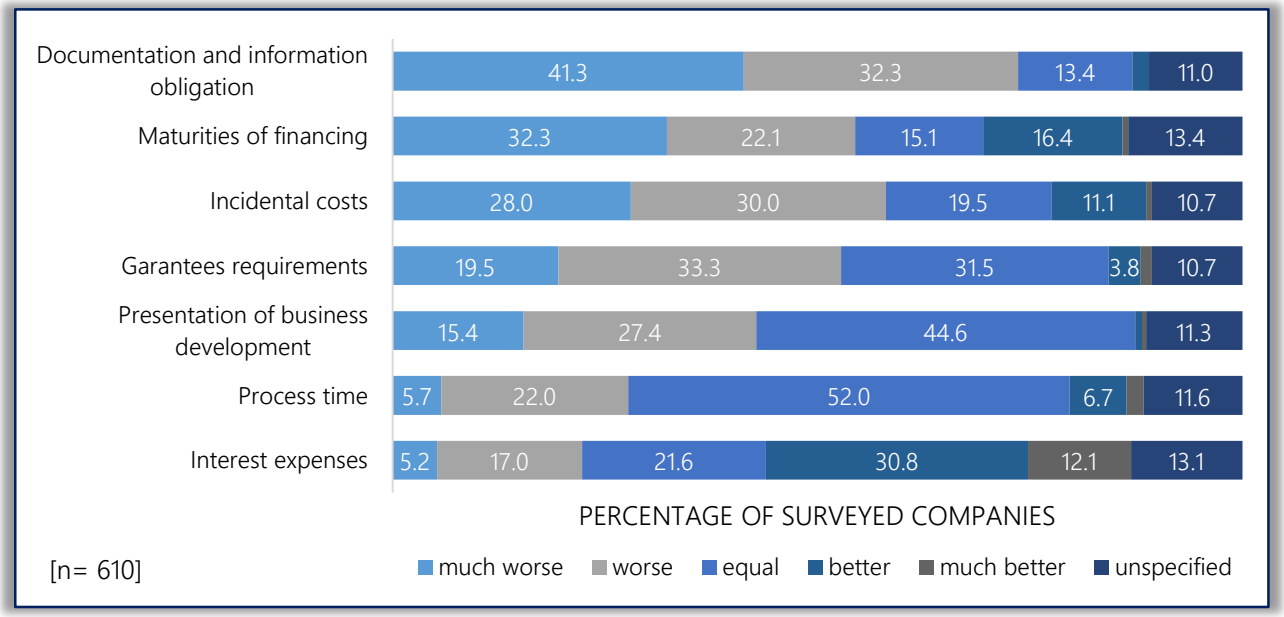

Figure 1 – Perception of changed financing conditions after financial crisis [8]

3. ASSESMENTS OF INVESTMENTS FOR INDUSTRY 4.0-READINESS

The increasing application of new information and communication technologies leads to a fundamental change in production processes. The smart factory is the key element in industry 4.0, where a close connection between human, engine and object is the driving force. [9] Production facilities and logistic systems communicate and organize themselves without human intervention. The technical foundation for this restructuring are cyber-physical systems, which intercommunicate via internet connections. [10] The ability for a fast and flexible reaction on customer requirements and a rising number of variants with a low patch size in a context of an economically production is going to increase, and in fact the competitiveness, too. [11] In order to catch up with these developments, huge investments, especially in fixed assets, are necessary. According to an empirical study in 2015 from PwC, Austria's industry expects an increase in turnover for barely 15 billion euros until 2020 initiated by industry 4.0-solutions. [12]

Actually SME's often haven't the financial endowment for extensive investments. For that very reason it is essential to prove a foreseen investment on its profitability. A structured and well-grounded planning of an expenditure helps the company to follow its business objectives and thus is a significant step for a sustainable economic growth. The main part of an investment plan is the investment calculation. The different investment calculation methods available make it possible to determine the profitability of an investment well, or to demonstrate the advantage of alternative investments. An investment that supports the financial corporate objectives is of course the requested fact. [13]

Within the framework of the empirical survey it was found that only 23.9% of the queried participants perform investment calculations. Three quarters of the interviewed companies haven't practiced investment budgeting before a capital spending. In fact, a mistaken investment caused by planning errors, or a not-taken necessary investment, may lead to great financial disadvantages for SMEs and therefore serious consequences can occur. [14] As the study showed, people are still not aware of the full extent of these reasons for the absence of these tool sets are on the one hand a lack of resources and on the other hand SME's don't see any necessity for its application. [15]

Moreover, the study showed a further result: Considering the size of the participated companies it turned out that the smaller the company is, the less often investment calculations are used. 85.5% of micro companies do

not use an investment calculation for their investment decisions, while medium-sized enterprises use more than half of this methodology.

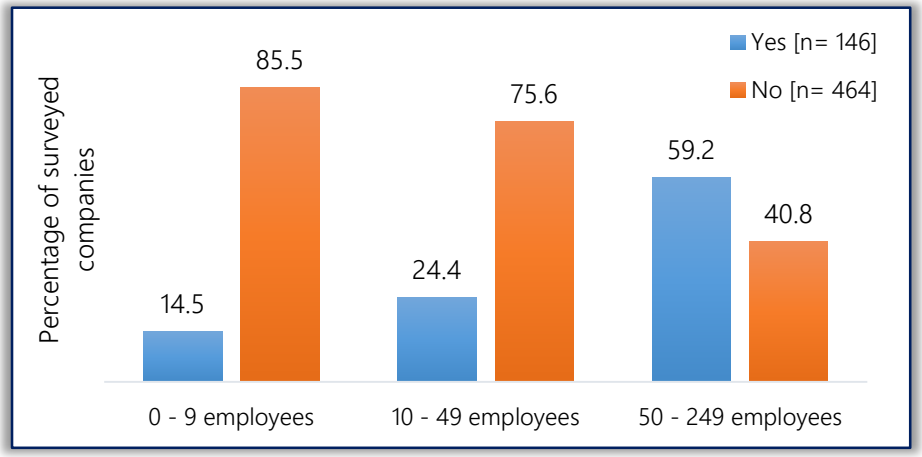

Figure 2 – Use of investment calculations [16]

Figure 2 clearly shows that 85.5% of micro-enterprises do not carry out an investment calculation. There is a similar picture amongst small-sized companies, 75.6% deny the use of these methods. The majority of medium-sized enterprises, at 59.2%, use investment bills to check investment projects for their profitability.

The investment analysis for economic efficiency calculations offers two different procedures: Static methods use only average values for the calculation and partly or completely negate the time component (one-period observation). The application of these methods is simple, but the results are rather vague. [17] In contrary dynamic methods utilize real discounted cash flows with a risk evaluation over several periods to obtain an accurate statement. [18] Figure 3 shows the different investment calculation methods.

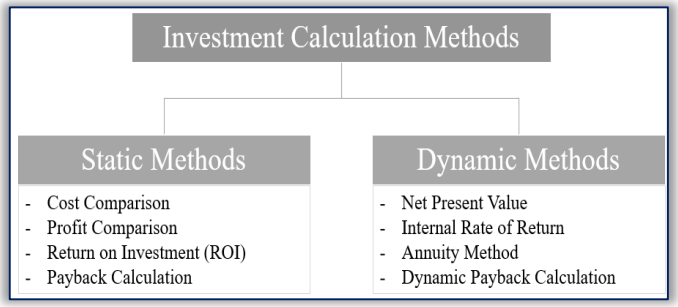

Figure 3 – Investment calculation methods [19]

When companies use investment accounting procedures, a clear preference of static methods can be identified, as shown in Figure 4. The model most often used by SMEs is the cost comparison (27.8%), followed by the payback-period (22.7%) and ROI calculation (20.6%). Dynamic methods, such as the method of the net present value or the internal rate-of-interest method, hardly play a role.

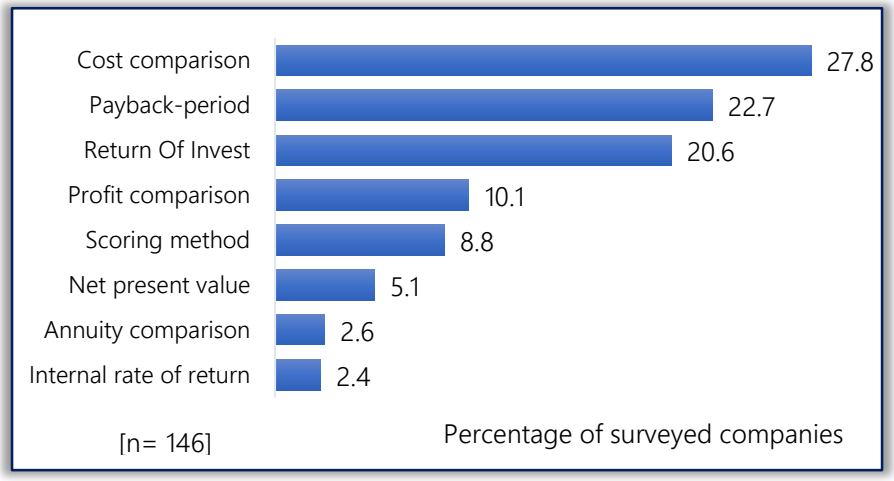

Figure 4 – Application of different investment calculations [20]

Those companies who stated that they had used an investment appraisal for the planning of an investment project were also asked whether there was calculated a control of the investment appraisal after the implementation of an investment project in order to draw conclusions for future projects. Almost all companies agreed.

4. SME BENEFITS FROM I 4.0 FUNDING THROUGH THE USE OF PUBLIC FUNDING

After the decision for an investment has been made on the basis of an investment appraisal, the question arises how this is to be financed. Especially I 4.0 demands considerable investments from companies. Since funding of I 4.0 activities is encouraged at EU and national level (e.g. H2020), it is interesting to see whether SMEs avail themselves of this potential in this context. When asked whether companies have made use of public funding for investments in property, plant and equipment over the past three years, more than three quarters have answered no.

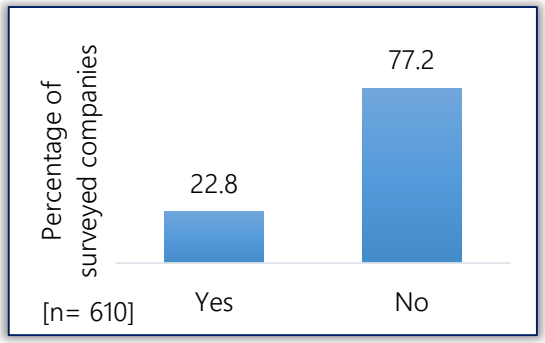

Figure 5 – Use of public funding [21]

In the next step, the question arises which public funding has been used most frequently. To this end, companies were given a number of possible answers. It turned out that classical government grants, followed by funding loans, were the most widely used instruments.

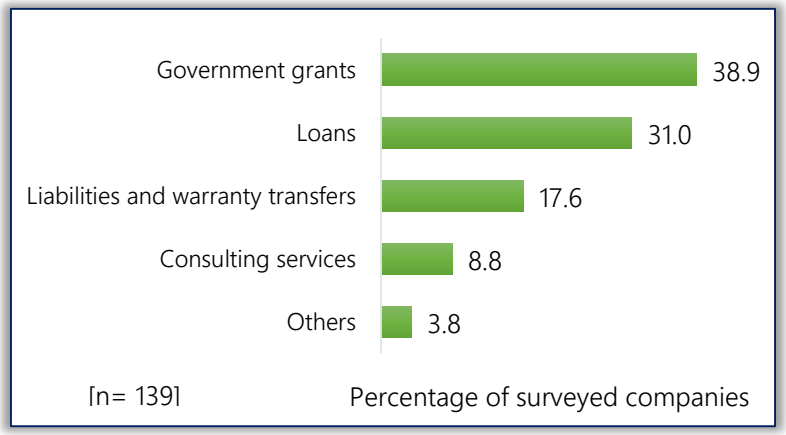

Figure 6 – Application of different financing types [22]

Looking at these results depending on the size of the company, it can be seen, as shown in Figure 7, that government grants are mostly claimed by micro-enterprises, but borrowing by means of loans or guarantees is rather immaterial. The larger the companies are, the more the proportion between government grants and debt financing changes.

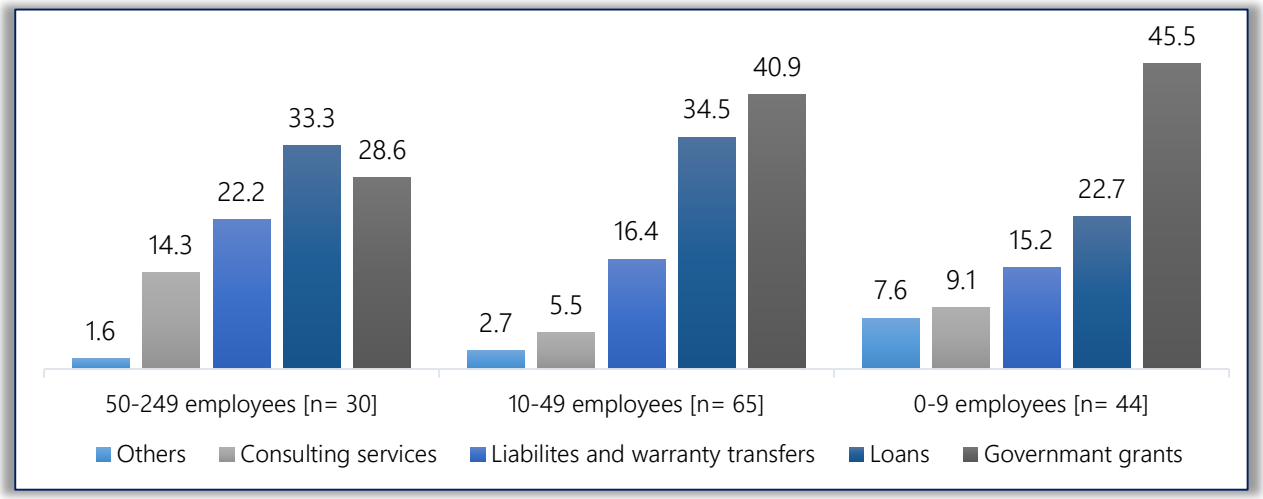

Figure 7 – Application of different financing types, size-dependent [23]

Further it is interesting to find out what the main reasons were why no public funding was used. The companies were given a number of possible answers. Figure 8 shows the main results.

The most common reason why no public funding has been used in the past three years is the fact that from the point of view of 29% of the companies, no additional funding was needed. 22.1% of companies have indicated that funding has not been attractive. 15.9% of the companies could not receive funding because their company or the planned project did not fulfill the criteria.

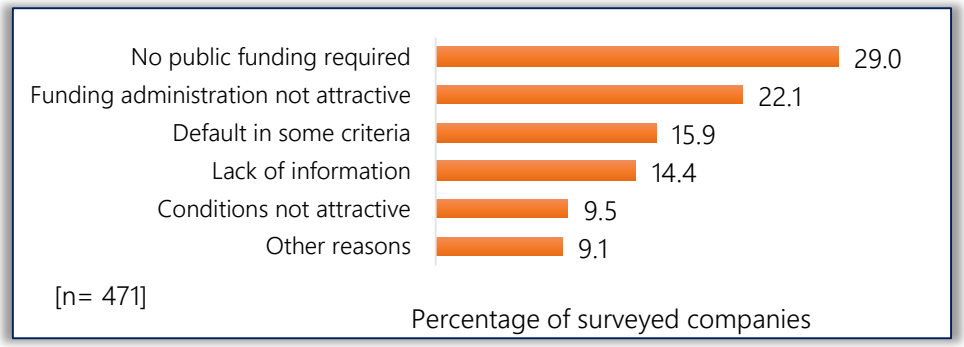

Figure 8 – Reasons for the non-use of public finance [24]

For 14.4% of companies there was a lack of information. This statement is to be regarded critically insofar as there are various institutions in Austria (e.g. FFG, BMVIT, etc.) which provide information on this subject. Further, this statement is confirmed by the fact that, as shown in Figure 6 (only a few companies have used consulting services / coaching). Furthermore, according to a German study by the market research institute TechConsult, less than 50% of companies do not even know that public funding exists at all. In order to round off the topic of financing SMEs, the use of different forms of financing was asked, as shown in Figure 9.

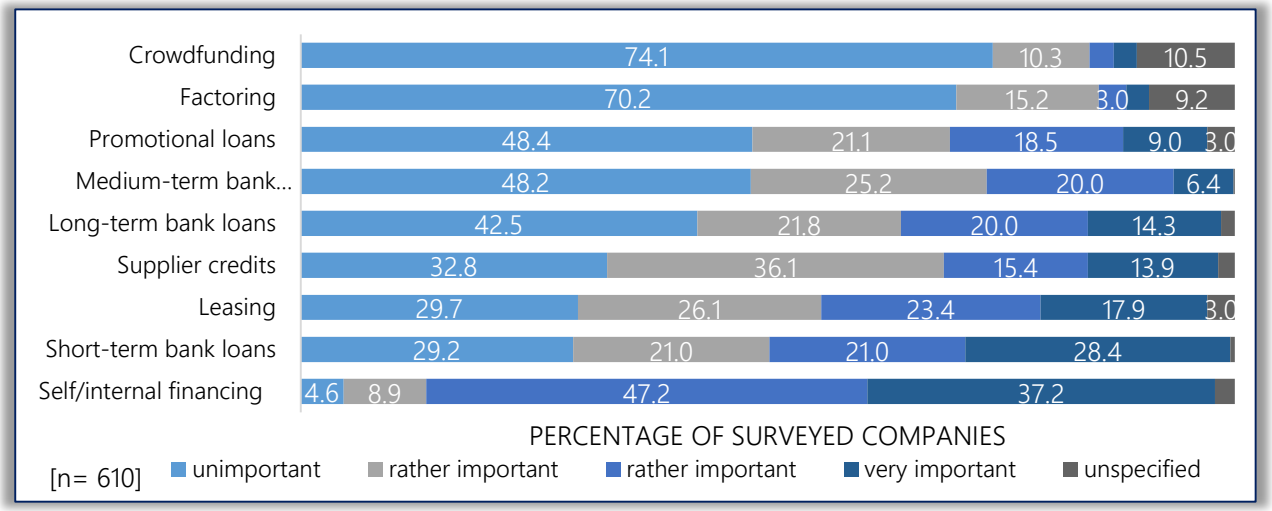

Figure 9 – Relevance of different financing forms [25]

It is striking that internal financing plays an essential role in SMEs, which is "more important" and "very important" for almost 85% of the respondents. This is in line with the quoted equity ratio of the companies surveyed, which is 20 to 30% among the majority of companies and can be classified as quite good.

The second most popular form of financing is short-term bank loans to bridge liquidity bottlenecks. Leasing, as an alternative to high investment payments and the financing of supplier loans, also play an important role. More modern forms of financing such as crowd funding, factoring and funding loans are hardly relevant to the surveyed companies. Astonishingly the maturity of the financing seems to have an important influence, as medium and long-term bank loans are considered to be unimportant and rather unimportant with well over 50%.

7. CONCLUSIONS

Investments are essential for a sustainable economic growth of industrial companies. Recently since the occurrence of the new wave of digitalization (Industry 4.0) huge investments in fixed assets have to be considered. Capital spending lead to capital needs – but the financial situation especially of SMEs is limited. Basel III, as a result of the financial crisis in 2007, resulted in stricter financing policies, which made it even harder for companies to get a bank credit. To reflect these issues this paper emphasized on the financial situation of SMEs after the financial crisis.

The investigation of the financial conditions for SMEs confirmed the expected results. Specifications for documentation and information deteriorated significantly. An increase in requirements and necessary collateralization affects the granting of a credit on a large scale.

Investment calculations are a tool for a careful sustainable investment policy. A wrong decision for an investment endangers the whole company. Particularly SMEs have a higher risk in an impending illiquidity

because of their contingent liabilities. Nevertheless, the empirical study documented that less than a quarter of the participants use investment calculations, hence static methods are preferably used.
Within the European Union and also on a national level, investments for Industry 4.0 applications are supported with financial resources. The study showed that more than three quarters of the questioned companies haven't used public funds. The reasons for the missing of public money in the companies was specified: Most often mentioned reason was that companies have not seen a necessity for a financial support. Another high quoted reason was, that the funding administration was not attractive to them. Internal financing is for SMEs the favoring form of financing. Modern types of financing play a minor role for satisfying funding needs.
Cyber physical Systems, Digitization, Industry 4.0, Big Data and Smart Production are just a few of today's paradigms, which mean major changes to companies. To remain globally competitive, companies are facing big investments. A sustainable livelihood of the enterprise can only be associated with good planning. This is why, above all, SMEs are required to carry out investment planning in order to be able to compete with large companies. The financial resources, especially for SMEs, are often regulated, alternative financing sources such as crowds funding or funding loans should be considered.
Note: This paper is based on the paper presented at 9th International Conference "Management of Technology – Step to Sustainable Production" – MOTSP 2017, organized by Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb, CROATIA and University North, Varaždin, CROATIA, in Dubrovnik, CROATIA, 5 – 7 April 2017.

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