



German Banks and German Growth: Reply

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The Journal of Economic History, Vol. 36, No. 2 (Jun., 1976), 425-427.

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German Banks and German Growth: Reply

We welcome the interest of our colleagues in our work on German banks. Let us examine their remarks in detail and see what, if any, bearing they have upon our argument.

First, Fremdling and Tilly find our section entitled "Historical Background" inadequate and suggest minor additions. We did not think it necessary to begin with the Fuggers in order to provide a satisfactory background for the analysis of aspects of German banking in the period 1883 to 1913. The reader who desires a richer background, however, can easily consult the references we cite. Moreover, such concerns have only marginal relevance to the substance of our argument.

Second, Fremdling and Tilly raise a number of questions about the character of current account credit. Curiously, they regard Alexander Gerschenkron's view that the *Kreditbanken* used current account credit to make long-term loans to industry as a "tiny shred of evidence." Gerschenkron was referring to a practice that was well known in banking and industry circles of the period. For example, Otto Jeidels, a leading figure in the Berliner Handelsgesellschaft for many years, commented that ". . . there are numerous cases where working capital is turned into fixed capital and this use of the banks' credit can certainly not be described as an irregular or abnormal manipulation."¹ The cost of current account credit relative to long-term credit is another issue raised by Fremdling and Tilly. Our information about the cost of current account credit is taken directly from Siegfried Buff, whom Fremdling and Tilly consider "an authority on German current-account banking business"; however, the issue is a peripheral one.² Our argument rests not on the cost of such credit but on its availability.

In their remarks about allocation of current account credit, Fremdling and Tilly do raise a serious issue. Their own logic, however, concedes us our argument for they readily admit that "the German great banks did apparently favor *larger-scale* enterprise in their credit policies." They also concede that such enterprise was to be found primarily in the heavy industries. Alerted to this bias by the work of Gerschenkron and also that of Jeidels, we sought a way to measure *whether* this bias represented a

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¹ Otto Jeidels, "Das Verhältnis der deutschen Grossbanken zur Industrie mit besonderer Berücksichtigung der Eisenindustrie," in *Staats- und Sozialwissenschaftliche Forschungen*, Band XXIV, Heft II, 121. Also see Arthur Schulze, "Die Bankkatas-trophen in Sachsen im Jahre 1901," in *Zeitschrift für die gesamte Staatswissenschaft*, Ergänzungsheft IX.

² Siegfried Buff, *Das Kontokorrentgeschäft im deutschen Bankgewerbe* (Berlin, 1904), 47.

misallocation of credit. Because the sign on the coefficient of our shift parameter was negative, we concluded that such a bias did represent a misallocation of credit since it introduced an inefficiency into the non-agricultural production function. If what Fremdling and Tilly mean is that such a bias need not always lead to a misallocation of credit, they are certainly correct. For example, a similar study in Japan in the post-World War II period showed an efficiency gain from such a bias.³ If Fremdling and Tilly do not accept our argument after conceding the existence of this bias, how do they explain the negative sign that we obtained?

A third matter to which Fremdling and Tilly call attention is the data. They suggest that we "apparently mistook a series on annual rate of growth of capital stock, 1870-1913, for the desired absolute values." Without even a tiny shred of evidence, they accuse us of using logarithms of this raw series as an input into the production function. As our paper indicates, we made no such error.⁴ They also question the quality of the data we used. Surely, every scholar in the field knows that the Hoffmann estimates of German output, capital and labor are the best available. If Fremdling and Tilly have better data series to offer, we will be happy to make use of them. In questioning the quality of the Eistert data series, Fremdling and Tilly exhibit a quaint naivete. It will surprise no one familiar with financial data of this era that Eistert does state that "many approximations were needed" to obtain his series.⁵ By using these series we have implicitly accepted *his* quite reasonable assumptions. Fremdling and Tilly must certainly be familiar enough with the new economic history to know that making such assumptions is a legitimate and widely practiced technique. Furthermore, because these assumptions are not our own, we can hardly be accused of having biased the data in our favor.

³ H. Neuburger and H. H. Stokes, "German Banking and Japanese Banking: A Comparative Analysis," *JOURNAL OF ECONOMIC HISTORY*, 35 (March 1975), 238-252.

⁴ In the appendix of our paper we defined "capital in non-agricultural sector = total capital stock derived from Hoffmann (page 26, col. 2) times the percentage of capital that is not agriculture derived from Hoffmann (page 44)." The raw capital stock was derived by successively multiplying the rates of growth. If γ_i is the rate of growth in period i , the total capital stock in period k , K_k , can be calculated.

$$K_k = \prod_{i=1}^k (1 + \gamma_i)$$

if we assume $K_1 = 1.00$.

We have taken our raw capital stock series, calculated using the above formula and used Hoffmann's data on the percentage of capital that is not agricultural to form the non-agricultural capital stock. The resulting series is correlated .999556 with a capital stock series derived (as suggested by Fremdling and Tilly) from Hoffmann page 253 (Col 7 - Col 1 - Col 3) in the period 1886-1913. (For the correlation calculation both series have been rounded to three significant digits.) Thus both techniques for calculating the capital stock give similar results.

⁵ Ekkehard Eistert, *Die Beeinflussung des Wirtschaftswachstums in Deutschland von 1882 bis 1913 durch das Bankensystem* (Berlin, 1970), 97.

Again, however, we will be happy to make use of any additional data that Fremdling and Tilly care to provide.

A fourth matter about which Fremdling and Tilly express concern is the appropriateness of our model. They have apparently misunderstood the Kmenta test for the correct specification of the production function, the results of which indicate that the Cobb-Douglas production function is appropriate in our case.⁶ They have also raised objections to our use of an aggregate production function for the German non-agricultural sector. One objection relates to the construction of the input data. Although there have been problems associated with the use of production functions to measure factor shares, such a technique has been found appropriate for explaining aggregate output.⁷ Objections to our use of a more complex function (involving time and various shift parameters) to measure neutral technical progress in place of the usual more rigid assumption of a monotonic time function seem particularly curious since we have in no way assumed our result prior to our estimation. Finally, our specification tests reported in the original paper and the BLUS tests for autocorrelation and heteroskedasticity and the normality test reported subsequently further substantiate our claim that we have tested adequately for the correct specification of the production function and for the statistical assumptions that our finding requires.⁸

Since the application of econometrics to historical problems is a difficult art, its practitioners must expect criticism from more traditional economic historians. Indeed, we hope that we can look forward to criticism that is considerably more helpful and valuable than that of Fremdling and Tilly, who offer much speculation but no empirical estimation. Surely, both speculation of this sort and the building and estimation of econometric models will serve the cause of scholarly inquiry. For our part, we shall continue our work with confidence in an approach that has proven itself not only in the study of the German economy but in that of the Japanese economy as well.

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⁶ Footnote 22 of our original article clearly explains that if ρ (a substitution parameter) is not significantly different from zero, then the elasticity of substitution (σ) is equal to one since $\sigma = 1/(1 + \rho)$.

⁷ Berndt and Christensen, "Testing for the Existence of a Consistent Aggregate Index of Labor Inputs," *American Economic Review*, 64 (June 1974) have indicated that they concur with the findings of Solow, "Technical Change and the Aggregate Production Function," *The Review of Economics and Statistics*, 39 (August 1957) p. 400, who notes that if the "researcher is only interested in explaining a time-series of outputs, he loses little by using aggregate inputs." Since the problem of the aggregate production function only arises if one attempts to measure trends in factor shares, something that we did not attempt to do, our use of the production function is appropriate.

⁸ Neuberger and Stokes, "German Banking and Japanese Banking."