

## STATIONARY EQUILIBRIUM

Schumpeter, HEA, Part II, ch. 4, #3, The Physiocrats

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224 Life Sketch of François Quesnay and Disciples

228 ff Common Doctrines

Natural Law, Agriculture, Laisser faire, Single Tax

239 ff Quesnay's Economic Analysis

241 ff Diagrammatic Significance of the Tableau

239f The overall description of a stationary economic process, which Quesnay embodied in his tableau is not, as his pupils and practically all critics believed, the centerpiece of that structure but an addition to it that is separable from the rest -- painted as it is on a separate canvas -- and therefore can be dealt with separately.

What it depicts is the flow of expenditures and products between social classes, which here become the actors in the economic play -- which they are not in the rest of Quesnay's work.

\* The flow of expenditures and products is between a 'farmer basin,' a 'landowner basin,' and a 'sterile class' basin.

The period of the process is from harvest to harvest.

The process is continuous: each later period is subsidized by the surplus from its predecessor.

ch The process is stationary: ea<sub>n</sub> later period reenacts its predecessor.

241f 1. The tableau achieves a tremendous simplification. Actually the economic life of a nonsocialist society consists of millions of relations or flows between individual firms or households. We can establish certain theorems about them but we cannot observe all of them. But if we replace them by relations between classes or by flows of class-aggregates, the unmanageable number of variables in the economic problem gradually reduces to a few which are easy to handle and to follow up.

A glance at the tableau suggests the idea of a Social product or a Total Output that is produced in one series of steps and 'distributed' in another. We are so familiar with this idea that we rarely realize how unrealistic it is. Production and distribution are indeed different processes in a socialist economy, but in capitalist society they are but different aspects of the same process: the bulk of capitalist distribution of incomes is formed in the course of the transactions that constitute production in the economic as distinct from the technological sense.

2. The simplification of the analytic pattern, achieved by the tableau, opens up great possibilities for numerical theory. Quesnay was more alive to these possibilities than Cantillon and, in this particular respect, he carried the latter's work much further. He troubled himself about statistical data and actually tried to estimate the values of annual output and other aggregates. That is to say, he did genuinely econometric work. This aspect too has acquired new actuality in our time through the great work of Leontieff,

Page 241 lines 8 & 9: <sup>W</sup>hat interests us now is the tableau idea considered as a tool, the tableau method itself. Three aspects of it call particularly for attention.

242 which, while entirely different from the work of Quesnay in  
 purpose // 242 // and technique, nevertheless revived the fund-  
 243/ mental principle of the tableau method. Marx, who stands between  
 the two, did not attempt to make his schema statically operative.

3. Third, and most important, the Cantillon-Quesnay tableau was the first method ever devised in order to convey an explicit conception of the nature of economic equilibrium. It would seem impossible to exaggerate the importance of this achievement if admiring disciples had not actually succeeded in doing so. Economics, like every other science, started with the investigation of local relations between two or more economic quantities, such as the relation between the quantity of a commodity that is available in a market and the price of it; in other words, it started with Partial Analysis... Disconnected efforts of this type were directed towards points that happened to be of some practical interest, or to attract curiosity for other reasons. It was but slowly that the fact began to dawn on analysts that there is a pervading interdependence between all economic phenomena, that they all hang together somehow. We have seen that the best of XVIIth century Discourses of Trade... display unmistakable symptoms of a growing awareness of this. But they never bothered to investigate how things hang together. They took it for granted; either they were unable to raise this interdependence to the plane of explicit formulation, or they did not see the necessity for doing so. They were far from realizing that this fundamental interdependence is the fundamental fact, the analysis of which is the chief source of the additions that the specifically scientific attitude has to make to the practical man's knowledge of economic phenomena; and that the most fundamental of all specifically scientific questions is the question whether the analysis of that interdependence will yield relations sufficient to determine -- if possible, uniquely -- all the prices and quantities of products and productive services that constitute an economic system.

I have said on a previous occasion that the first discovery of a science is the discovery of the science itself. But that does not spell the discovery of its fundamental problem. That comes much later. In the case of economics, it came particularly late.... The discovery was not fully made until Walras, whose system of equations, defining (static) equilibrium in a system of interdependent quantities, is the Magna Carta of economic theory -- the technical imperfection of that monument of constitutional law being an essential part of the analogy (see below, Part IV, ch. 7, sec. 7, p. 1024f).

4. Now Cantillon and Quesnay had this conception of the general interdependence of all sectors of all elements of the economic process in which -- as Dupont actually put it -- nothing stands alone but all things hang together. / And their distinctive merit ... was that without realizing the possibilities of the method later on adumbrated by Isnard, they made that conception explicit in a way of their own, namely, by the tableau method; while the idea of representing

307 In his (Isnard's) not otherwise remarkable book there is an elementary system of equations that -- barring the difference in technique -- describes the interdependence within the universe of prices in a way suggestive of Walras.

243 con'd the pure logic of the economic process by a system of simultaneous equations was quite outside their range of vision, they represented it by a picture. In a sense this method was primitive and lacking in rigor -- which is in fact why it fell out of the running and why analysis historically developed on the other line. But in one respect it was superior to the logically superior method; it visualized the (stationary) economic process as a circuit flow that in each period returns upon itself. This is not only a method of conveying the fact that the economic process is logically self-contained, a distinct thing that is complete in itself, but it also a method of conveying features of it -- definite sequences in particular -- that do not stand out equally well in a system of simultaneous equations. Of course, there is also the simplification of the theory of general equilibrium already adverted to: Quesnay identified general equilibrium, that is, equilibrium in the economy as a whole in distinction to the equilibrium in any particular small sector of it, with the equilibrium of social aggregates -- exactly as do the modern Keynesians.

Although Turgot was no econometrician, his great name has been assigned this place in our gallery because he is so often classed with the physiocrats, though mostly with qualifications. At first sight, this seems reasonable enough, for his main work abounds in passages that are evidently intended to emphasize allegiance to specifically physiocrat tenets. We read that land is the only source of riches; that the cultivateur produces not only his own compensation but also the income that serves to remunerate the class of artisans and other stipendies; that the farmer's activity is the prime mover of the social engine, whereas the manufacturer's only transforms; that the farmer supports and feeds all other classes, and so on. But if we look more closely, we make surprising discovery. Those passages are then seen to be strangers to the argument into which they are inserted. We can suppress them without affecting the rest. In fact, the rest gains in consistency thereby. Therefore, if we adhere to a principle that is uniformly applied in this book, namely, ~~the principle that is uniformly applied in this book to the interpretation~~

the principle of relevance to analytic procedures and results, we have no choice but to neglect those passages. What are we to think of this? First of all, commonly accepted rules of criticism would lead us to suspect those passages if we were dealing with an ancient text. And it so happens that in this particular case such distrust is not completely unwarranted. For we know that there was not a quite amicable discussion between Dupont and Torgot on the subject of the publication of the latter's manuscript, and we do not know what exactly the result was. However, I will waive // the point. But quite independently of it, there is, considering what we know of Turgot's generous character, no difficulty in understanding why, writing for publication at that particular time, he should have gone out of his way to pay respect to a group with which he agreed on many points of scientific economics -- from which he had, perhaps, learned a good deal, for example, in matters of capital theory-- and with which he wholeheartedly on all the immediately practical points of economic policy, though he disagreed with them on some points of their political philosophy. According to this hypothesis, which puts him, morally, high above all those who emphasize points of difference in order to distance themselves from fellow workers to whom they owe obligation, he should not be classified a physiocrat with reservations, but as a nonphysiocrat with physiocrat sympathies. This seems, in fact, to meet the case.

We went to the trouble of disentangling Turgot from physiocrats not only to make his figure stand upon his own pedestal, as it should, but also in order to put this pedestal in the right place. For more closely than with the physiocrats was he associated with another group, if 'group' is for a very loose connection that was no school in the proper sense of the term. It centered in a strong and influential man, who was no doctrinaire, however, and no exponent of any system--Gournay (1712-59). This fact throws // much light on Turgot's background as an economist. Gournay had traveled extensively and was an intelligent observer of English developments. Much of what we know about his views has a distinctively English flavor. And among his writings are several translations, in particular one of Child's New Discourse. Turgot was his personal friend and also was interested in the works of English economists, especially Hume and Josiah Tucker, whom he translated. If the obvious inference may be trusted, we have here an instance of the way in which not only political but also scientific ideas crossed and recrossed the

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Channel. The possible filiation Child-Hune-Turgot is particularly interesting--still more so in case we have to add the name of A. Smith after that of Turgot [below ch 6 #6]. In the French part of his background, the most important figure is Cantillon.

Turgot's brilliant achievements, his unchallenged place in the history of our science, and his evident title to membership in the triumvirate in which Beccaria and A. Smith are his colleagues are sufficient reason why it is desirable to look for a moment at the man and his career. Anne Robert Jacques Turgot, Baron de l'Aulne (1727-81; referred to by his contemporaries as M. de Turgot; before 1750, he was known as Abbe de Brucourt), came from a Norman family that was of old, if not high, nobility and fairly well to do, if not rich. The sociological type is rendered by the English word 'gentry' and by the German word 'Junker.' He was as a third son, educated for the Church, and this clerical education, which gave full scope to his brilliant and precocious gifts, ought to receive recognition, though it usually does not, in an enumeration of the factors that made for his achievements. He emerged full of great plans and master of wide horizons (scientifically and otherwise) as an abbe at the Sorbonne, where he became quite a figure, writing, discussing, experiencing the second formative experience of his youth, that of the 'secte encyclopediste,' though he very soon moved away from it. Then he exchanged the career of churchman for the civil service, and a civil servant he remained for the rest of his active life. The bureaucracies of all times and countries may be proud of him, for not only was he an ornament of the French bureaucracy of the ancien regime, but this bureaucracy also was the third of the environmental influences that helped to form him.. He was a great success as intendant (general administrator) of the district (generalite) of Limoges, 1761-74, where his zeal, resourcefulness, and public spirit showed up to best advantage. On the strength of this success he was appointed in 1774, Minister of the Navy and, a few months later, Controleur General des Finances (which means Minister of Finance and Commerce and Commissioner of Public Works), a position he held for twenty months, much of the time tortured by gout. After his fall, he lived in retirement until his death.

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Except for the just pride we economists may take in so brilliant a fellow worker, the main importance of this career for a history of economic // analysis is that it explains why Turgot's scientific work did not come to full fruition. Biographers and historians of economic thought, however, have always allocated most of their space to his exploits as a minister of finance and, in dealing with them, have propagated two sagas that have a bearing on the sociology of our science and must therefore be briefly noticed. Before doing so I wish, however, , to disclaim any intention of debunking the fame of one of the none too numerous significant figures of which the history of economics can boast: it goes without saying that nobody would think of writing a volume on Great Ministers of Finance without including Turgot. The first of these sagas might be entitled: 'The Economist in Action.' It depicts the man who, from scientific analysis, derives recipes for curing the ills of the state and, on attaining power, rushes to carry them into effect. There is nothing whatever in this. Turgot was first and last a great civil servant, who looked upon state and society with the eyes of a civil servant. So when he obtained cabinet office--power would be a misleading term to use--he set about to improve the financial administration and the all but desperate situation of the royal finances. In both of these respects he succeeded remarkably--in fact, unbeliev-

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ably/almost--well, and these were his main achievements. He also established, by royal decree, internal free trade in grains--the only other measure relevant for us--abolished the jurandes, the craft guilds. These and some other minor measures were not successes in the political sense mainly because of his failure to consider tactical aspects: they immediately elicited violect resistance, the one concerning the grain trade by a piece of bad luck--its coincidence with a bad harvest, The point to be observed, however, that nothing Turgot did actually or showed any intention of doing, has any particular relation to any other doctrine, scientific or other. It was all in the line of an unually able civil servant who perceived the currents of his time and tried to serve them in a practical spirit. He was so little given to obeying abstract principles-- which of course is all to his credit--that in one instance he actually introduced a protective duty, and, in another, embarked upon state enterprise (in the chemical industry). The physiocrats applauded him of course and made propaganda for him, but they had little to do with his policies and nothing to do with his advent to office, for in 1774 they were in no position to exert any influence. By the same token, his fall was not a defeat of any doctrine that was specifically their own.

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The other saga derives from the saga of the French Revolution. Since most of the writers on Turgot were and are in sympathy with the latter, they were inevitably driven to exalting 'into heroes that fought for the light in the darkness of despotism' a chosen few of the servants of the ancien regime. Turgot is the chief beneficiary of this tradition that was initiated by the revolutionaries themselves, who, even officially, sometimes reffer to Turgot as ce bon citoyen. And some writers have added the touch that Turgot was raised to office by the voice of the people and dismissed at the behest of an intriguing court. As a matter of fact, Turgot // was appointed Controleur by a thoroughly well-meaning monarch who looked around among his bureaucrats for the best man for the job. If there was any other influence, it was that of the Minister de Maurepas. As soon as he was in office Turgot, no doubt with the most meritorious, began to lean heavily upon the royal prerogative. Now it is very easy, when a minister is supported by a monarch, to draw up excellent decrees and to force them down the throats of parlements who refuse to register them. The difficulty, since the government is carried on among living people and groups, to make these decrees accepted. Louis XVI at first lent his wholehearted support, but the trouble with him, who had many good qualities, was precisely that he was no despot and quite unwilling to use force. And though Turgot was also the target of court and other intrigues--of the former, mainly owing to his policy of retrenchment--it was the popular resistance of the rural population and of craft guilds that became after a time the dominant factor in the situation: there were even local revolts which Turgot suppressed with a firm hand. It would not be true either, but it is nearer the truth than is the opposite, to say that Turgot was raised to/office by the king and overthrown by the people. For our purpose, the relevance of this is the light it sheds on he personality of one of the greatest<sup>s</sup>Scientific economists: ~~of all times: The interpretation submitted makes the king come off better than does the usual one, it does not make Turgot come off~~

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ists of all times. The interpretation submitted makes the king come off better than does the usual one but, what alone matters here, it does not make Turgot come off worse. It only makes him come off differently. We see the excellent civil servant who is a good administrator and (perhaps) adviser but no leader or tactician. We also see honesty and firmness (quite as much as do other interpreters) and (what does not, perhaps, impress these other interpreters quite as much) loyalty to his king. The answer to the academic question that has been raised, whether or not, had he stayed in office he might have prevented the Revolution, depends on what we mean by revolution. If we mean the overthrow of the monarchy and the sanguinary excesses, the answer should be in the affirmative: no more, however, because of the reforms he might have carried in that case that because of his willingness to call out the troops. No cap of liberty will fit Turgot.

T's chief work, Reflexions sur la formation et la distribution des richesses, was written for the benefit of two Chinese students in 1766, and published...in the Ephemerides (1769-70; E. T. 1898). Other works are listed in this note, pp 247f.

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If we now try to compare Turgot's scientific personality with those of Beccaria and A. Smith, significant similarities strike us at first: all three were polyhistoric in learning and range of vision; all three stood outside the arena of business and political pursuits; a;; three displayed single-minded devotion to the duty in hand. Turgot was undoubtedly the most brilliant of the three, though his brilliance was somewhat tinged with superficiality, not in economics, but in his outlying intellectual domains. The main difference, from the standpoint of their scientific achievement, is that A. Smith spent very little on nonscientific work, Beccaria very much. and Turgot almost all he had. During the thirteen years at Limoges, Turgot can have had but scanty leisure; during his (nearly) two years of ministerial office, practically none; his creative work must have been done between the ages of 18 and 34. And this explains all that there is to explain, not indeed about the comparative merits of the three works in question, but about the different degrees in which they were finished works at all.

Turgot was much too able a man to write anything insignificant. Nevertheless, only the Turgot specialist needs to go beyond the Reflexions, and with one exception we shall confine ourselves to this. The slender work was evidently written in hot haste and never thoroughly revised. It looks as Marshall's Principles would look if text, notes, and appendices were destroyed and only the marginal summaries--and not all of those--were preserved. In fact, it is not much more than a very elaborate/table of contents written for a bulky but nonexistent treatise. Such as it is, however, Turgot's theoretical skeleton is, even irrespective of its priority, distinctly superior to the theoretical skeleton of the Wealth of Nations. In order to arrive at this opinion, it is not necessary to impute to Turgot anything he did not actually say or to credit him with any implications of what he did say that he may possible not have seen himself. He actually delivered the goods. In calling work unfinished or a skeleton, I do not mean to say that there is need for uncertain conjecture or generosity of interpretation in order to finish it. It presents a complete system of economic theory. What is lacking any competent economist could supply without adding (except criticism) from his own stock of knowledge. Of course, no one admires the Wealth of Nations for its theoretical skeleton alone. It owes its position to its mature wisdom, its luxuriant illustrations,

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its effective advocacy of policies. And there is also something to be said for the ponderous creation of the academic professional: it was the product of patience, of meticulous care, of self-discipline--and we cannot be sure that Turgot ever would have produced something comparable to it, even if he had all the leisure in the world. Still, a lesson does follow from the very different success of both works: in economics at least, intellectual performance is not enough; finish counts; and so do elaboration, application, and illustration; even now the days are far off when it will be possible, as it is in physics, to shape international thought by an article that covers less than one page. Turgot's work fared as well as it did because of his eminence in another walk of life. Even so it never bore the fruits that it might easily have bo-ne.

Since the only satisfactory way to summarize this summary is to transcribe it, and since, moreover, the most important points will be touched on in subsequent chapters, only a few general comments will be offered here instead of a Reader's Guide. Roughly the first third of the treatise--the first 31 sections--presents the groundwork including the Cantillon-Quesnay schema of classes and an analysis of their relations in production and distribution that is splashed with physiocrat colors. Certain fundamental propositions, like the proposition that competition always reduces wages to the minimum-of-existence level, are insisted on from the first. Sections xxxii-L contain a theory of barter, price, and money that, as far as it goes, is almost faultless, and, barring explicit formulation of the marginal principle, within measurable distance of that of Böhm-Bawerk. The rest of the treatise is devoted mainly to a capital theory that anticipates most of nineteenth-century work, and to the subjects of interest, saving and investment, and capital values. Originality in individual points is difficult to assert or deny, the more so because Turgot does not quote--which is no reproach in the case of such a sketch. But comprehensive vision of the essential facts and their interrelations plus excellence of formulation are in evidence to a degree that would make the whole of the work an original contribution even if no individual point had been exclusively Turgot's own. And there are practically no definite errors to be found in this first of all treatises on Value and Distribution that were to become so popular in the later decades of the nineteenth century. It is not too much to say that analytic economics took a century to get where it could have got in twenty years after the publication of Turgot's treatise had its content been properly understood and absorbed by an alert profession, As it was, even J. B. Say--the most important link between Turgot and Walras--did not know how to exploit it fully.

HEA p. 332 n. 5 at the bottom of the page, explains the divergence in the numbering of the sections in the Reflexions between the Schelle edition and that of the Ephemerides and vol. V of the Dupont edition of the Oeuvres de Mr. Turgot.



HEA: Increasing (258), Decreasing (259), Historical Returns (262)

258 Increase population inducing increasing per capita wealth  
 Increasing expenditure on social overhead inducing decreasing cost per unit service  
 Increasing returns in manufacturing industry from increasing division of labor from effects of progress of improvement upon upon the real price of manufactures

259 Turgot: increasing then decreasing returns as equal quantities of capital (or for that matter, labor) are successively added to a given piece of land, the result from each application will first successively increase up to a certain point (at which the ratio of the increment of product and the increment of capital will reach a maximum). Beyond this point however further applications of equal quantities of capital will be attended by progressively smaller increases in product, and the sequence of these decreases will in the end converge towards zero.

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 Note 5

Generalization to the Production Function.

Let the production function be;

$$P = f(x_1, x_2, x_3, \dots)$$

Suppose that  $P$ ,  $x_1$ , and  $x_2$  alone vary with  $P$  the one dependent variable.

Let  $x_2$  be constant and construct a plane through the point where it is constant and perpendicular to the  $x_2$  axis.

On that plane the curve whose variables are  $P$  and  $x_1$ , will represent Turgot's law of first increasing and then decreasing returns.

See further Part IV, ch. 7, #8, pp. 1026-53 (The Production Function)  
 Part V, ch. 2, #1, pp. 1148-50 (Consumers' Behavior and New Production Function)  
 Part V, ch. 4, (Dynamics and Business Cycle Research) pp. 460-470

303 Daniel Bernoulli (1700-1782: ". the significance to an individual of an additional dollar is inversely proportional to the number of dollars he already has."

$$y = K \cdot dx/x; \quad dy/dx = K/x; \quad y = K \log x$$

470 ~~David RICARDO (1772-1823) Life Sketch; On Theory, see next sheet.~~

472 ~~"Even if we did not know that Ricardo's thought was inspired by the Wealth of Nations, which he took up in 1799 when boring himself at a health resort, we could not help seeing the argument of the Principles starts with a criticism of A. Smith, which really runs through the whole book. With a high degree of confidence, we may reconstruct the argument of his thought so far as it was determined by his interest -- analytic and practical -- in current events: he studied the Uwealth; he was shocked by what seemed to him a logical muddle; and the Principles was the ultimate work of creative criticism"~~

### III

Schumpeter, HEA, Part II, ch. 4, #2.

b) ~~Decreasing Returns: Stewart and Turgot. Cf. Alibi.~~

c) Historical Increasing Returns

262 But these spells of increasing returns unlike the others, do not occur within the given pattern of technological practice. Like A. Smith's improved machines they involve a change in the practice. If we visualize Turgot's intervals, first of increasing and then of decreasing returns, as a curve that ascends, ~~it~~ reaches a maximum, and then descends, then we see that the ~~x~~ increasing returns in the previous sense are depicted by a section of the curve, but that increasing returns in the sense now under consideration are not. They can however be represented by shifting the whole curve upwards (altering its shape or not as the case may require) into a new position: the old curve breaks off and is replaced by a ~~highxxxxxx~~ new one that keeps a higher level (though not necessarily along all its course) but again displays both an interval of increasing and an interval of decreasing returns. The increase in returns in the new curve shifts from its old to its new position. It should be added that, if the curve shifts again and again, there is no reason why the differences between these successive levels should grow //263// smaller:

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→ there is no law of decreasing returns to technological progress.  
In order to avoid confusion between two entirely different phenomena, we had ~~xxxx~~ better restrict the term Increasing Returns  
→ to Turgot's case. This we shall accordingly do. When we wish to retain the association between the two, misleading though it is, we shall use, for the phenomenon now explained, the phrase Historical Increasing ~~xx~~ returns. The phrase has been chosen because these historical increasing returns cannot, like the genuine ones, be represented by any curve or law, least of all by a curve on which we can travel back and forth. For new levels of technique are reached in the course of an irreversible historical process and are hidden from us until they are actually reached.

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There is nothing remarkable about Senior's formulation of it (decreasing returns) except that he stressed more than did other authors, especially more than did Ricardo, the importance of the necessary condition of its validity -- a given and constant techno //585// logical horizon, or the proviso 'agricultural skill remaining the same' -- and also the importance of true exceptions... There is however a point... that merits particular

Schumpeter, BEA, Part III, ch. 6, #1, c.

attention. All the leading economists of that period confined diminishing returns to land and many had asserted an opposite law for manufactures... But no one that I know of has been so emphatic about this law of increasing returns in manufactures, as was Senior, who asserted with little qualification that additional labor when employed in manufactures is more, when employed in agriculture is less, efficient ~~xxx~~ in proportion...

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As stated above, Ricardo and others recognized, and Senior emphasized, the fact that the operation of diminishing returns is interrupted by technological progress.

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¶ Law of diminishing returns is of course an empirical statement -- a generalization from observed facts that only further observation ~~xx~~ can either verify or refute. Cf. alibi.

Schumpeter, Hist Econ Anal

562f Stationary state, cf. 565

565 Synchronization economics, cf. 975

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The law of diminishing returns is ~~is~~ of course an empirical statement.. It is interesting to report that theorists have almost un~~an~~imously displayed an aversion to admitting this. One af ter another has tried to 'prove' it from logically anterior, and as they thought, more obvious assumptions. This can in fact be done for the the law of di~~mi~~nishing average returns, which has been shown to follow from assumptions that may be held to be simpler than the 'law' itself.

(By Karl Menger discussing arguments by Böhm-Bawerk and (Knut) Wicksell.) See also pp 1036 f.