Understanding Creative Destruction in the Mexican Economy

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Introduction

This paper explores the idea that economic evolution is a process of self-transformation over time, in which the source of endogenous growth is structural change in economic activities. Structural change is seen as the core factor encouraging economic evolution, via a creative destruction process. The evolutionary approach is an attempt to explain this continual self-transformation of the economy reflecting the fact that capitalist economies are never in equilibrium. There is an element of path dependence in the evolutionary process, in which historical economic events are decided through the course of evolution. Evolution also deals with the process of generating variety and the selection mechanism, with competition acting as a selection mechanism on variety, which chooses the most efficient and productive varieties in the economy. All of these forces are brought together in this paper under the general heading of increasing returns and the relation between productivity growth and the growth of markets.

Productivity growth implies increased efficiency, and improvements in efficiency require and underpin competition. In effect, competition results in a selection process that influences the evolution of variety via structural change and thus differential rates of growth of the sectors in an economy. Therefore, productivity growth is both a cause, and a consequence, of structural change, which is nothing more than the idea of an endogenous process of self-development and growth in the economy.

This research contends that these dynamic processes have played a central role in the self-development and growth in the Mexican economy. Thus, the research question addressed by the paper concerns how to explain the process of productivity growth driven structural change that endogenously

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self-transformed the Mexican economy. As the Mexican economy has never been in equilibrium, although, of course, it is ordered by a mix of market and non-market forces, the neo-classical notion of equilibrium has been avoided because it is an unsuitable theoretical structure in explaining how the Mexican economy evolved over time. The main driving force for this self-transformation has been the State's economic policies.

In the neoclassical approach, Harrod-Domar highlights the instability of the economy, a knife-edge macroeconomic stability between the natural and warrantee growth rate. This instability is caused by the economy self-transforming over time. The economy can never be in equilibrium, as Harrod-Domar concluded, because capitalism is restless. It is a process of creative destruction in a knowledge-based economy, which we explore in this paper. In addition, this paper helps understand why, Fabricant's second law of productivity $(g_1 = a_2 + b_2 g)$ can be used as a production function supporting the statement that labour productivity in manufacturing is the engine of growth in the whole economy.

The process of creative-destruction is highlighted at the non-aggregate level, in which the division of labour increased productivity causes technical progress, and hence more demand increasing the size of the market. Free trade opened up markets of international scope, augmenting further opportunities for the specialization of the division of labour, in which each increment of employment leads to a further subdivision of tasks, which leads to higher labour productivity. Moreover, in the use of machinery and the adoption of indirect processes there is a further division of labour. Thus, the extent of this division of labour must always be limited by the extent of the market, but the extent of the market also depends upon the division of labour. Therefore, as in Adam Smith's account of growth, faster capital accumulation is associated with a faster rate of growth of employment and output, and faster growth in living standards. The division of labour is at once a cause and an effect of economic progress, a self-sustaining economic growth, in which fundamental technical advances are not in fact needed to drive Smith's engine of economic growth. In this sense, labour productivity in manufacturing is the engine of growth in the economy, and as Smith pointed out it is important to build up a manufacturing sector because of its crucial effect on the rate of development of an economy.

Since, productivity grows at different degrees in the different branches of manufacturing. Fabricant's productivity laws are the main contextual approach that helps explain the process of self-transformation in Mexico.

As Metcalfe, *et al* (2002) point out, the Fabricant productivity laws stand up as a robust empirical descriptor of the relation between technical progress, investment and the growth of the market. Since every individual sector makes a contribution to overall productivity growth it follows immediately that the productivity growth rates of the various industries are economically independent, in which case, the Fabricant laws become a theory of growth and self-transformation.

Schumpeter's Economic Development

Schumpeter suggests economic changes have actually occurred not as a result of continuous adaptation, rather through their fruitfulness. Development, Schumpeter stresses, pertains only to such changes in economic life as are not forced upon it from without but arise by its own initiative, from within. Economic development is in practice simply founded upon the fact that the data change and that the economy continuously adapts itself to them, whence Schumpeter suggests there is no economic development. Economic development is not a phenomenon to be explained economically, but the economy is dragged along by the changes in the surrounding world. The causes and hence the explanation of the development must be sought in the group of facts which are described by economic theory. Every concrete process of development finally rests upon preceding developments. Every process of development creates the prerequisites for the following. Development is spontaneous and discontinuous change in the channels of the flow, appearing in the sphere of industrial and commercial life, forever alters and displaces the equilibrium state that previously existed. Development in our sense is then defined by the introduction of a new good or a new quality of a good; the introduction of a new method of production; the opening of a new market; the conquest of a new source of supply of raw materials or half manufactured goods and the carrying out of the new organization of any industry. This is especially true in a competitive economy, in which each new combinations means the competitive elimination of the old. As a rule the new combinations must draw the necessary means of production from some old combinations (Pasinetti, 1993:63-68).

According to Scott (1989:103) Schumpeter views "the theory of economic development as being concerned with changes in the economy which are endogenous to the economic system: with endogenous technical progress not exogenous".

Restless Capitalism

According to Schumpeter (2000) in dealing with capitalism we are dealing with an evolutionary process (Hodgson, 1993:139). "Capitalism is by nature a form or method of economic change and not only never is but never can be stationary. And this evolutionary character of the capitalist process is not merely due to the fact that economic life goes on in a social and natural environment which changes and by its changes alters the data of economic action; this fact is important and theses changes often condition industrial change, but they are not its prime movers. Nor is this evolutionary character due to a quasi-automatic increase in population and capital or to the vagaries of monetary systems of which exactly the same thing holds true. The fundamental impulse that set and keeps the capitalist engine in motion comes from the new consumers' good, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates…The opening up of new markets, foreign or domestic, and the organizational development from the craft shop and factory, the same process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consist in and what every capitalist concern has got to live in" (Schumpeter, 2002:82-3) and (Hodgson, 1993:147).

Moreover, Metcalfe (2002:2) claims "Capitalism is restless because knowledge is restless, there never can be any equilibrium in respect of knowledge and the development of an economy is unpredictable and open-ended". Furthermore, "capitalism is restless because of this unlimited capacity to generate new knowledge and new behaviours and it is this propensity for variation from within which makes it so dynamic, sufficiently so that economies may be completely transformed in structure over relatively short periods of historical time. Moreover, every advance in knowledge creates the conditions for further advances, economic growth is an autocatalytic process in which change begets change" (Metcalfe *et al,* 2002:3). In essence, capitalism in equilibrium is a contradiction in terms.

Growth and Adaptive Process

According to Metcalfe (2002) economic growth occurs under the rules of restless capitalism, rules under which multiple, uncoordinated innovative

activities are ordered by market processes to produce patterns of growth and development in the economy as well as in its framing institutions. Economic growth follows from sequences of technical, organisational and institutional changes that create and absorb new areas of productive activity and consumption into the economic structure, and evolutionary theory is naturally a growth theory that focuses on the diversity in rates of growth, within appropriately defined populations. The question is 'Why growth rates differ and vary over time? (Metcalfe, 2002:2).

Structural change follows "from diversity in growth, and the mutual determination of those growth rates means that they are emergent phenomena arising form replication and interaction…As Pasinetti concluded, it is the presence of endogenous structural change, which makes it impossible to conduct the analysis of growth by macro economic methods alone… Economies are transformed over time by the generation and application of new knowledge and we more or less imperfectly capture these qualitative and quantitative changes in the conventional measures of economic growth: transformation comes first and growth is the derivative consequence" (Metcalfe, 2002:2-3).

The fact that "knowledge based systems cannot be in equilibrium if knowledge is not in equilibrium, is the basis for a 'far from equilibrium' judgement about the economic process. Every position generates its own destruction…Markets are important as loci of knowledge generation, and in being open to and indeed generate the incentives for endogenous change" (Metcalfe, 2002:3).

Thus "growth involves transformation, transformation leads to development and capitalism in steady growth is a contradiction in terms. Whatever steady state growth theory is about it is not obviously knowledge based capitalism…Aggregation hides the evolutionary process that generated the aggregates. Evolutionary growth process depend on the existence of variety, on the relative spread or diffusion of rival products and methods of production and these essential elements are written out of the aggregate picture" (Metcalfe, 2002:7).

In addition, "a knowledge growth framework not only begins at the micro level and formulates appropriate rules for aggregation, it is also explains how the composition of those aggregates changes in a systematic fashion in the course of economic development. The problem of aggregation cannot be solved unless we understand the process of interaction between micro agents and this takes us directly to the problem of co-ordination and the

role of market processes. Markets are the central instituted form by which economic order and changes in order are generated within capitalism" (Metcalfe, 2002:7).

In equilibrium time passes but nothing happens. "As Schumpeter remarked, to understand capitalism you have to understand its capacity to transform itself from within and this requires an understanding of why the economy is far from equilibrium as a modern physicist might put it. In this regard knowledge is like energy it defies equilibrium by maintaining a potential for change that is ever present" (Metcalfe, 2002:7).

According to Metcalfe (2002:3) "the important aspect of Schumpeter's analysis is that it brings together stability in the capitalist order with instability in the capitalist system. The continuous transformations in economic form are associated with the creation and application of new combinations that arise from within the otherwise relatively more stable order of overarching institutions".

Metcalfe (2002:4) explains the argument of Allyn Young (1928) "to the effect that the link between technical progress and economic change was a deeper reflection of the Smithian argument on the extension of the division of labour" That is to say that " the rate of advance of knowledge and thus economic progress is connected closely as cause and effect with the rate of growth of the market. Consequently, technical progress induces further advances in technique" (Metcalfe, 2002:11).

Metcalfe (2002:5) claims that "new knowledge defines new combinations, entrepreneurship introduces these new combinations into the space of economic activities, and those that pass the test of economic and social viability may spread further into the system attracting resources and demand and so enhancing or destroying the markets for existing activities. In the process, new knowledge is gathered, new opportunities emerge, improvements are made and so the process feeds on itself in autocatalytic fashion. However, there is no metric through which knowledge can be reduced to a scalar quantity. Knowledge is not an aggregate, a union of individual's knowledge not a sum, and it is quite inappropriate to think of it as some homogenous substance that has an independent macro economic existence".

Thus, "a knowledge base theory of growth will emphasise the link between the micro diversity of behaviour and process of creativity and the formulation of novelty by consumers as much as by firms. Indeed it is the continual generation of novelty on both sides of the market relationship that underpins the idea of restless capitalism and keeps capitalism far from

equilibrium. Consequently, the dynamics of the growth process cannot be governed by a process of convergence to equilibrium states, for the states of rest are continually being redefined by the accumulation of consumer and producer knowledge that occurs in the market process" (Metcalfe, 2002:9).

According to Foster and Metcalfe (2001) the accumulation of practically useful knowledge is perhaps the most important kind of joint production to economics. The endogenous nature of knowledge accumulation is the most powerful source of dynamic increasing returns. "Capitalism is restless because it contains within itself the institutional framework and incentive structures to generate variation and to have market coordination turn variety into differential growth and structural change. Thus we have a sequence… (economic variety + market coordination)→ Differential growth→ structural change→ differential accumulation of knowledge→ renewed economic variety… It is the growth of knowledge and the application of knowledge that gives capitalism its dynamic bias. From this follows Allyn Young's insistence that changes within sectors induce changes in other sectors such that 'Every important advance in the organization of production…alters the conditions of industrial activity and initiates responses elsewhere in the industrial structure which in turn have a further unsetting effect'… What Young saw so clearly was that increasing returns create a reciprocal dependence in rates of technical progress within and between activities… Capitalist market economies are economies in which one thing leads to another. The accumulation of knowledge allied with increasing returns makes innovation an endogenous evolutionary process. Economic evolution is open ended; we have no way of knowing where it will lead" (Foster and Metcalfe, 2001:12-3).

Metcalfe, Foster and Ramlogan's Adaptive Growth

Explanations that use any of the neoclassical or Keynesian endogenous growth models, must involve the traditional (Cobb-Douglas) production function, as a result of the reswitching and reversing capital controversy, and in any case are only valid given a single homogenous commodity. An alternative model to explain endogenous growth is Professor Stan Metcalfe's Adaptive Growth Model, where the technical progress function is formulated in the following form:

$$q_j = \alpha_j + \omega_j \left(\frac{I}{Q} \right)_j$$

"Where $\left(\frac{I}{Q}\right)$ is the rate of investment in physical capacity expansion, $j\omega$ is the coefficient that translate the investment into productivity growth and $j\alpha$ is the remaining rate of productivity growth, which depends on all the remaining kinds of investment…[I]n a growth context we can reasonably assume that the growth rate of capacity is the same as the growth rate of actual output. If this is accepted it follows that the progress function becomes" (Metcalfe, Foster and Ramlogan, 2002:13).

$$q_j = \alpha_j + \beta_j g_j$$

"This is precisely Fabricant's Law, with $\left[\beta_j b_j \alpha_j\right]$ less than one, output growth results in productivity growth and productivity growth is consistent with employment growth provided the industry's market is growing quickly enough. The coefficient $j\beta$, is the measure of the degree of dynamic increasing returns in the industry, whereas the coefficient $j\alpha$ is the measure of all those influences on technical progress that do not depend on the immediate expansion of the market...The Fabricant Law stands up remarkably well as a robust empirical descriptor of the relation between technical progress, investment and the growth of the market… …Since every individual sector makes a contribution to overall productivity growth it follows immediately that the productivity growth rates of the various industries are economically independent … Therefore, we can turn Fabricant's law into a theory of growth and self transformation" (Metcalfe *et al*, 2002:13-6).

The process of creative-destruction is highlighted at the non-aggregate level, in which the division of labour increased productivity, causing technical progress, and hence more demand, thereby increasing the size of the market. Free trade opened up markets of international scope, augmenting further opportunities for the specialization of the division of labour, in which each increment of employment will lead to a further subdivision of tasks, which leads to higher labour productivity. Moreover, in the use of machinery and the adoption of indirect processes there is a further division of labour. Thus, the extent of this division of labour must always be limited by the extent of the market, but the extent of the market also depends upon the division of labour. Therefore, as in Smith's account of growth, faster capital accumulation is associated with a faster rate of growth of employment and output, and faster growth in living standards. The division of labour is at once a cause and an effect of economic progress, a self-sustaining economic growth, in which fundamental technical advances are not in fact needed to

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Since, productivity grows at different degrees in the different branches of manufacturing. Fabricant's productivity laws are the main contextual approach that helps explain the process of self-transformation in Mexico. As Metcalfe, *et al* (2002) point out, the Fabricant productivity laws stand up as a robust empirical descriptor of the relation between technical progress, investment and the growth of the market. Since every individual sector makes a contribution to overall productivity growth it follows immediately that the productivity growth rates of the various industries are economically independent, in which case, the Fabricant laws become a theory of growth and self-transformation.

Empirical evidence

In order to support the claim that the Mexican Economy evolves or self-transforms over time the Engel-Granger test was used to test for co-integration. Co-integration was not expected to be found because according to Foster (1991) "the lack of co-integration implies structural change"

The analysis demonstrated that the Mexican economy was evolving from 1965 to 2000 as the tested showed a lack of co-integration. The process used to estimate the Engel-Granger co-integration test in Fabricant's second law equation consisted of estimating the results of equations and saving the squared errors in each manufacturing equation, then applying the Phillip-Perron (PP) test, if there was no lagged variable in the manufacturing equations, or the Augmented Dickey-Fuller (ADF) test, where there was a lagged variable in the equations among the manufacturing sub-sectors, to the saved squared errors. The Mackinnon critical values indicate whether the null hypothesis of co-integration can be rejected.

The eight manufacture sub-sectors in Mexico for which data are available are as follows:

Manufacturing sub-sectors in Mexico

Food, Beverage and Tobacco	(FBT)
Textile, Clothe and Leather Industry	(TCLI)
Wood Industry	(WI)
Paper, Printing and Publishing	(PPP)
Chemical Solutions and Oil derivates	(CHS)
Non metal Industry	(NM)
Basic Metal Industry	(BM)
Metal Products, Machinery and Equipment	(MP)

Table 1
Testing economic evolution in México

11*lgabg*=+	BM	CHS	FBT	MP	NM	PPP	TCLI	WI
PP Test Statistic	-0.389933	ADF -4.435	-2.771803	-1.486963	3.154017	-1.713827	-1.618478	ADF - 3.580543
1% Critical Value*	-3.6752	-3.6576	-3.6422	-3.6752	-3.6752	-3.6289	-3.6289	-3.7076
5% Critical Value	-2.9665	-2.9591	-2.9527	-2.9665	-2.9665	-2.9472	-2.9472	-2.9798
10% Critical Value	-2.622	-2.6181	-2.6148	-2.622	-2.622	-2.6118	-2.6118	-2.629

* MacKinnon critical values for rejection of hypothesis of a unit root.

From the results summarised in Table 1, the Mackinnon critical values are rejected in the entire test, which means there was no co-integration present among manufacturing sub-sectors. Therefore, the Mexican economy was undergoing a self-transformation process from 1965 to 2000.

Fabricant's Second Productivity Law

The Fabricant Second productivity law is essentially the same as the Verdoorn relationship, but expressed in the form of labour input growth related to output growth to counter spurious correlation that might affect the first Fabricant equation. Again there should be a positive correlation between the growth of output and the growth of productivity, and the coefficient should be less than 1. Table 2 shows a correlation between growth of output and productivity, with the condition that the coefficient should be less than 1 holding in most of the sub-sectors, the exception being Metal Products, Machinery and Equipment, where it is over unity, 6.19, and negative. However, a positive correlation is only found in the Textile, Clothes and Leather Industry; Paper, Printing and Publishing; Non mineral products; and Basic Metal. These sub-sectors have positive economies of scale. Negative economies of scale are found in Food, Beverage and Tobacco; Wood Industry; and Chemical Solution and Oil derivates.

Employment and Output grew faster in those industries in which labour productivity grew faster as in Basic Metal, Non Mineral Products, Paper, Printing and Publishing; and Textile, Clothes and Leather Industry, and these are the same sub-sectors as in the first productivity law.

Fabricant's law came from a technological production function, which is better able to support the idea of a meso-level view of economic growth than the macro-level approach. We notice the diversity of manufacturing behaviour at the sub-sector level. FBT, WI, CHS and MP had diminishing returns of scale, otherwise each increase in the growth of labour productivity is negatively related to the growth of output, whilst the rest of the manufacturing sub-sectors had positive return of scale, each increase in the growth rate of labour productivity is positively related to the growth of output. The growth of productivity is independent in each of the manufacturing sub-sectors; therefore, the technological change was different in each manufacturing sub-sector.

Table 2

Fabricant's test in Mexican Manufacturing from 1965 to 2000

$$()_{22/}gab=+$$

(Two-Stage Least Square Method*)

Constant	t-statistic	Coefficient		t-statistic	R-squared
Food, Beverage and Tobacco	-0.002	-0.05	-0.16	-2.31	0.92
Textile, Clothes and Leather industry	-0.002	-4.00	0.02	2.07	0.10
Wood Industry and Wood products	-0.007	-0.85	-0.04	-1.78	0.18
Paper and its products, Printing and Publishing	-0.004	-3.24	0.06	2.49	0.15
Chemical Solution, Oil, coal, plastic and rubber product derivate	0.011	1.81	-0.07	-2.99	0.89
Non mineral products except petrol oil and coal products	-0.006	-7.27	0.19	8.93	0.53
Basic Metallic Industries	-0.001	-1.12	0.06	2.76	0.23

(*) Also White Heteroskedasticity-Consistent Standard Errors & Covariance to correct heteroskedasticity

The process of economic growth can be formally described as the result of the expansion in productive resources and the increase in the efficiency of their use. Thus, industrialization is also a process of structural change. Structural change refers to changes in rates of accumulation, and shifts in the sector composition of economic activity, focusing initially on the allocation of employment, production and changes in the allocation of economic activity. Desegregation is essential for structural analysis because changes in the sector composition of production are the most prominent feature of structural transformation. Associated with income growth are shifts in demand, trade and factor use. These interact with the pattern of productivity growth, the availability of natural resources and government policies to determine the pace and nature of industrialization (Syrquin, 1988:206, 224, 228).

The Chow break point test was used to test for structural change in the economy, and to identify the year(s) in which structural change is evident in the Mexican economic data. The Chow test was used to identify if there has been any change in the regression values after a break point year. Dummies were used in the model to identify the source of the structural change and

explore whether the change was in the constant (change in the slope) or in the coefficient (an acceleration in the economy). The entire structural change test was done using Fabricant's Productivity Laws for the manufacture sub-sector.

A review of the Mexican economy conducted by the author suggested the breakpoint year should be 1983, when creative destruction was triggered by the economic debt crisis that ended with the shift away from protectionist policy. In order to reject the null hypothesis of economic stability, the F-statistic value should be under 0.05%. In the manufacturing sub-sectors the Chow's test results are under 0.05%, thus, it is possible to reject the null hypothesis of economic stability. Therefore, the breakpoint year for structural change was 1983. However, the stability test for Metal Products, Machinery and Equipment (MP) sub-sector, in the fourth Fabricant's laws indicated that the breakpoint year was actually 1985. Moreover, the stability test in Textile, Cloth and Leather Industry (TCLI) for equation 1, 2 and 4 also indicates 1985 as the breakpoint year. This means that not all manufacturing sectors incurred structural change in the same breakpoint year, because the effects of creative destruction were not felt equally by all manufactures at the same time.

To fully understand the nature of the structural changes, the original Fabricant's Productivity law was augmented using a dummy variable. If the constant value results are different in both tests, then structural change has changed the slope in the labour productivity. Moreover, if the slope coefficient results are different in both tests, structural change caused acceleration in labour productivity growth. The following equations show the addition of the dummy variable, which is the last term in the equation; *D* is the dummy variable that takes values of zero from 1965 to 1982, and values of one from 1983 to 2000; in Fabricant's Laws. However, *D* takes values of zero from 1965 to 1984, and values of one from 1985 to 2000, in the sectors, which had the structural change in 1985.

$$g_l = a_2 + b_2 D + c_2 g + d_2 D_g$$

In essence, we compare the results, using the second productivity law from Fabricant, with and without the introduction of the dummy variable.

Table 3 shows the results of the structural change test using the second Fabricant's productivity law. Again structural change impacted both the slope and acceleration of labour productivity for all manufacturing sectors. Structural change occurred in 1983 for the FBT, WI, PPP, CHS, NM and BS, and 1985 for MP and TCLI.

From table 3 it is also possible to notice that prior to 1982, under the Import Industrial Substitution (IIS) strategy, there were manufacturing sectors with diminishing return, with labour productivity growth negatively correlated to the growth of output, such as in Food, Beverage and Tobacco; Wood Industry; Chemical solution; and Metal Products. After 1982, under the free trade strategy, which promoted competition and manufacturing productivity, Chemical Solution, and Metal Products continued having diminishing returns. Moreover, Paper, Printing and Publishing although had increasing returns prior to 1982 had diminishing returns under the free trade strategy. Furthermore, Food, Beverage and Tobacco; and Wood Industry started to have positive increasing returns with the free trade strategy. This diversity was hidden when running the regression from 1965 to 2000, we just knew that labour productivity had been different in each manufacturing sub-sector. Introducing the dummies in the productivity equations, the picture suddenly changes. We know that the IIS strategy affected productivity performance in manufacturing and that the free trade strategy improved the growth of labour productivity in manufacturing sub-sectors. Hence, competition was a healthy strategy for the Mexican manufacturing sub-sectors, and that under IIS competition deliberately avoided.

Table 3

Structural Change in Fabricant's test and dummies to test the nature of change in

()22*lgab*=+				
(Two-Stage Least Square*)				
Fabricant			**Dummy Variable**	
Constant	**Coefficient**	**Constant**		**Coefficient**
FBT	-0.16	-2.31	-0.02	0.61
TCLI	0.02	2.07	-0.01	0.08
WI	-0.04	-1.78	-0.01	0.23
PPP	0.06	2.49	0.02	-0.24
CHS	-0.07	-2.99	0.02	-0.17
NM	0.19	8.93	-0.01	0.22
BM	0.06	2.76	-0.01	0.19
MP	-1.66	-5.35	0.39	-4.19

(*) Also White Heteroskedasticity-Consistent Standard Errors & Covariance to correct heteroskedasticity.

Implications of Empirical Evidence

From the Engel-Granger co-integration test, we found that the Mackinnon critical values are rejected in the entire manufacturing sector using the Fabricant's Productivity Laws, which means there was no co-integration in manufacturing labour productivity. Thus we can conclude that there was a process of self-transformation in the Mexican economy from 1965 to 2000 due to structural change.

We found a correlation in growth rate between labour productivity and output in manufacturing sub-sectors. However, the condition of positive correlation with coefficient less than unity were in the Textile, Clothes and Leather Industry; Paper, Printing and Publishing; Non Metal Products; and Basic Metal. Labour productivity grew faster as the manufacturing output rate of growth grew. Negative economies of scale were found in the Food, Beverage and Tobacco; Wood Industry; Chemical Solutions; and Metal Products, Machinery and Equipment. Mexican manufacturing was growing at different rates and at different times, as demonstrated by the Chow test.

The Chow-Dummy tests of structural change show changes in the slope and in the acceleration of the growth of the economy due to structural changes in manufacturing labour productivity from 1965 to 2000. This structural change was not uniform in manufacturing, although most industries experienced it in 1983 some, such as Metal Product, Machinery and Equipment; and Textile, Clothes and Leather Industry, experienced it in 1985. The open market industrialization strategy focused, as it did, on the non-oil manufacturing export sector did not affect labour productivity at the same time in every manufacturing sub-sector.

The productivity growth rates of the various manufacturing sub-sectors are economically independent. This is empirically demonstrated with the labour productivity diversity behaviour in the Mexican manufacturing. Introducing dummies in the original Fabricant equations, we found that the diversity in the diminishing returns changes after 1982, when the free trade industrialization toward productivity and competition was established in Mexico. As Fabricant suggests "When we turn from the averages and concentrate upon the movements of manufacturing production in individual industries, we find sharp differences in the secular rates of change in the physical output of these industries. In every period, some decline, some forge ahead, and only a few industries follow the general trend of manufacturing output. These disparate rates of growth affect, and are affected by, changes

in the structure of industry, in technical processes, in the kind of goods produced and in the distribution of employment" (Fabricant, 1940:9).

We have shown that output growth and productivity growth are related, at least in the case of the Mexican economy. Fabricant's relations are absolutely fundamental because they tie productivity growth to economic evolution.

The Mexican economy is self-transforming and the key sector in this self-transformation is manufacturing. The Mexican economy is characterized by diversity of productivity growth experience across its manufacturing sector. In effect, Mexican manufacturers exhibit independent behaviour.

The analysis above confirms that the free trade strategy promoted productivity and competition in Mexican manufacturing. The augmented dummy model empirically shows that the Mexican economy changed after 1982, due to structural change in manufacturing, with labour productivity starting to self-transform the entire Mexican economy. We were better able to understand this behaviour using a technical progress function instead of the traditional production function.

Conclusions

The Mexican economy has experienced a process of creative destruction over time in which the State's economic strategies have been the main source of structural change.

Manufacturing was seen as the engine of growth of the economy after the 1940's. The Mexican State strongly believed that manufacturing development would self-transform the entire economy because manufacturing growth would spread its growth performance to other economic sectors.

Ever present creative-destruction has continually caused structural change within the Mexican economy, with manufacturing as the engine of growth. In essence, the Mexican economy has never achieved an equilibrium state. As a result, the macroeconomic approach of aggregation and equilibrium is not suitable for understanding the role of manufacturing in the development process of the Mexican economy.

Capitalism can never be stationary. The process of creative-destruction is the essence of capitalism. The Harrod-Domar model highlights the instability of the economy, a knife-edge macroeconomic stability between the natural and warranted growth rate. This instability occurs because the economy is self-transforming over time. The economy can never be in equilibrium, as Harrod-Domar concluded, because capitalism is restless due to its unlimited capacity to generate new knowledge.

The conventional view of equilibrium has missed a highly visible pattern of change that characterizes capitalism. These changes are incompatible with the idea of steady state over time, which is impossible in practice. Furthermore, equilibrium treats factors as exogenous and stable in time, when in fact they are continually evolving as a result of economic forces.

Adam Smith gave us the growth approach to explain the self-transformation process in Mexico. The division of labour is at once a cause and an effect of economic progress; it is a self-sustaining stimulus to economic growth. Stressing manufacturing relevance on the rate of development of an economy supports the proposition that labour productivity growth at manufacturing level is the engine of growth in the economy.

Fabricant's second law stands up as a robust empirical descriptor of the relation between technical progress, investment and the growth of markets. Moreover, Fabricant's work lays the foundations for a non-aggregative theory of endogenous growth and self-transformation based on Smithian principles. The division of labour is limited by the extent of the market, as productivity gains increase with the extent of the market, hence industrial output can be expanded more than proportionately with the labour employed in industry. Each increase in employment will lead to a further subdivision of tasks, which will lead to higher labour productivity. Moreover, structural changes may be defined as changes in the composition of the division of labour. Therefore, if the economic structure is changing, the first place to look is in terms of the patterns of employment and output shares and the changes they evidence over time.

Advances in manufacturing productivity are part of the evolution of the entire industrial system. Technological changes have not appeared with equal prominence in all sectors of manufacturing. The rate of improvement in the quality of labour has been greater in some industries than in others. This difference explains why labour productivity in some industries rose more rapidly than labour productivity in other industries.

In microdiversity lies the foundation for growth in output and productivity. Diversity is the key to adaptive, restless capitalism; and it is diversity in technical progress, or labour productivity, that is the basis of growth and self-transformation.

Structural changes are defined as changes in the composition of the division of labour or labour productivity. The rate of growth of productivity per man in the economy as a whole will be greater, the greater is the rate of growth of manufacturing output. Moreover, the productivity growth rates of the various industries are economically independent.

Smith pointed out the importance of building up a manufacturing sector because of its crucial effect on the rate of development of an economy, implying labour productivity in manufacturing is the engine of growth in the economy.

Since productivity grows at different degrees in manufacturing, Fabricant's productivity laws is the main framework for explaining the process of self-transformation in Mexico.

Fabricant links productivity growth to the rate of growth of the industry. The evolutionary argument focuses on diversity of growth rates and that diversity of growth rates is related to diversity of technical progress or labour productivity. Moreover, since every individual sector makes a contribution to overall productivity growth it follows immediately that the productivity growth rates of the various industries are economically independent. Therefore, Fabricant's second law becomes a theory of growth and self-transformation, in which a technical progress function replaces the traditional Cobb-Douglas production function. The rate of growth of labour productivity is the proper measure of technical progress, when labour is the only primary factor of production.

Man-hours are the closest approximation for measuring productivity, and changes in the utilization of labour are better recorded than for capital. In addition, the measurement of labour presents less difficulty than the measurement of capital.

The analysis in this paper has been based on a view of economic progress that depends on the intertwining between increasing returns and the market process. Economies never grow without simultaneous development that changes the relative economic importance of different sectors. Growth is a product of structural change and economic self-transformation. Self-transformation implies diversity of activity growth rates in the economy. Transformation or adaptation is the way the economy responds to novelty in the form of innovation. Moreover, transformation is the process that generates growth within industries or between industries. Self-transformation relies on dynamics of induced productivity growth.

Mexican economic evolution has been due to a creative-destruction process of structural change, in which manufacturing labour productivity has been the engine of growth of the whole economy over time.

Economic growth is far from an equilibrium process. Growth is not generated at the macro level. Aggregation hides evolution that depends on structural change. Transformation involves structural change, and structural

change requires technical progress, or labour productivity growth, which arise from within the system. Growth and technical progress are inseparable. They are genuinely adaptive evolutionary processes driven by microeconomic diversity. Diversity is the key to adaptive, restless capitalism, and it is diversity in technical progress, or labour productivity that is the basis of growth and self-transformation. Therefore, growth of productivity, output and employment are determined mutually and endogenously. Growth is endogenous, and its nature depends on the prevailing structure of the economy, which is itself adapting.

The development of knowledge and productivity cannot be separated from the growth of the individual sectors. The rate of advance of knowledge and thus economic progress is closely connected with the rate of growth of the market, and technical progress, division of labour or labour productivity; and hence effects self-transformation, which in turn can influence the advance of knowledge.

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