Abstract:
This paper examines the relationship between income inequality and economic growth in Mexico. We first review changes in industrial trade, production, and investment patterns over the liberalization period and how those changes led to the creation of a relatively high-wage, economic enclave of industries producing capital-goods for export. We then compare annual changes in manufacturing pay inequality and annual GDP growth, finding that the previously stable, negative relationship predicted by Kuznets broke down at the height of the period of structural reform in Mexico, giving way to a positive relationship after 1989. The paper finds that reform fundamentally altered the relationship between inequality and growth as benefits accrued to an increasingly small number of firms. The findings support the hypothesis of an “augmented” Kuznets Curve according to which some developed countries are found on an upward-sloping addendum to Kuznets’ original formulation.
I. Introduction

The relationship between inequality and economic growth has troubled economists and social scientists since Kuznets posited his now famous curve in 1955. Normative questions about social equity aside, whether inequality and growth are correlated and in which direction, if any, causation flows have far-reaching implications for economic and social policy that cannot be ignored. Is inequality an unfortunate but necessary ingredient for growth, or might equality and growth be compatible or, perhaps, even complementary? Such questions are symptomatic of a broader debate regarding the existence of a trade-off between efficiency and equality in general.¹ This paper addresses these questions by examining the relationship between inequality and growth in Mexico, and how that relationship has been affected by the market-oriented, structural economic reforms of the past twenty years.

Simon Kuznets hypothesized that the relationship between growth and inequality changes based on a country’s development – or degree of industrialization. In the initial phase of development, income diverges as the rural population migrates to the more unequal, higher wage urban industrial centers. As the urban proletariat matures, however, political institutions are created that increase lower-wage workers’ income shares and inequality decreases as industrialization deepens.² For a given level of income (or industrialization), then, the relationship is assumed to be stable – negative for most countries currently on the downward-sloping portion of the curve.

Although Kuznets hypothesized the effect of growth (or development) on inequality, later literature reversed this causal relationship. Empirical work seeking to confirm or reject Kuznets’ hypothesis has proliferated in recent years, using both pooled and panel data in attempt to shed light on the relationship across countries and time. The majority of this empirical work found a consistent, negative relationship between inequality and growth, typically based on multivariate cross-country regression models in which inequality is one variable determining growth.³ Birdsall, Ross and Sabot (1995), for example, found that egalitarianism was a key ingredient in the recipe for rapid growth in East Asia. Surveying twenty-three different studies, Benabou (1996) concluded that “initial inequality is detrimental to long-run growth.”

In 1998 Klaus Deininger and Lyn Squire disrupted the emerging consensus with a study based on their ambitious new global inequality data set compiled for the World Bank from disparate household surveys of 108 countries since 1950.⁴ Based on the new data, Deininger and Squire (1998) found no evidence for Kuznets’ inverted “U.” Using the same data and panel specification, Forbes (2000) found that initial inequality leads to higher subsequent rates of growth. Several authors pointed out severe problems with the

¹ Okun (1975) is the classic presentation of this debate.
² Kuznets (1955), 20-22.
⁴ The data set is available in Deininger and Squire (1996).
new data, however, casting a shadow over conclusions drawn from it. Galbraith and Kum (2002) show how problems with the Deininger and Squire data lead to multiple and contradictory conclusions about the relationship between inequality and growth (ranging from upright “U” to inverted “U” to positive linear and negative linear). Thus the negative relationship for most countries appears to remain intact, questions regarding causality and endogeneity notwithstanding.

Recent work has found that a few rich countries specializing in high-wage, advanced capital goods have experienced a post-Kuznets rise in inequality. While most developing and industrialized countries are found on the downward portion of Kuznets’ inverted “U,” inequality has been rising with increased income levels in high-income countries like Japan, the United States, and the United Kingdom. Conceição and Galbraith (2001) postulate that Kuznets’ original formulation might apply only as long as countries produce principally consumer goods, and might break down as industrial activity shifts into monopolistic, advanced technology goods for the world market. In that case, the richest and most advanced industrial economies producing capital goods for export would be found on an “augmented” Kuznets Curve with an upward-sloping tail for such countries, as shown in Figure 1. Away from the augmented curve’s peak and trough, however, the relationship between growth and inequality is presumed to be a more or less stable function of income level.

![Image of the "augmented" Kuznets Curve](image)

Figure 1. The “augmented” Kuznets Curve.

The present paper adds a new dimension to this research by showing that the relationship between growth and inequality may change, as it does in the case of Mexico, as a result of structural reform. Although Mexico’s income level doesn’t change

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5 Problems the Deininger and Squire data set include unbalanced coverage and inconsistency of income measures. For critiques of the data see Atkinson and Brandolini (2001), Galbraith and Kum (2004), and Galbraith, Conceição, Kum (2000).


7 For a more detailed discussion of the augmented Kuznets curve, see Conceição and Galbraith (2001). For a discussion of global data sets on inequality and empirical work on the augmented Kuznets curve see Galbraith and Kum (2002) and Galbraith, Conceição and Kum (2000).
appreciably during the final decades of the 20th century, data on manufacturing pay inequality show that the stable, negative relationship between growth and inequality predicted by Kuznets reverses at the peak of the reform period, thrusting Mexico into a small group of otherwise wealthy and highly industrialized countries for whom inequality rises with economic growth. After a brief review of the reforms undertaken during Mexico’s liberalization period, we will examine the evidence for this change and mechanisms by which it may have taken place. We conclude with implications and avenues for further research on the topic.

II. Mexico

As it did generally throughout Latin America, the 1982 debt crisis marked the end of four decades of import-substitution industrialization in Mexico as it turned toward market-oriented reforms in attempt to resuscitate its ailing economy in the face of falling oil prices coupled with rising inflation and rising global interest rates. Designed to increase efficiency by introducing international competition and eliminating state intervention in the economy, reform was deep and broad, including trade and financial liberalization, commercial deregulation, privatization, and tax reform. Most relevant to the present discussion are reforms related to trade and capital mobility.

Tariff and non-tariff barriers to trade were reduced substantially between 1983 and 1987 in order to stimulate exports, increase productivity, and reduce inflation. Mexico joined the General Agreement on Tariffs and Trade (GATT) in 1986, and signed numerous multilateral trade agreements between 1988 and 1998. By 1988, the average import tariff had been reduced to 10.4% (from 23% in 1980) and import licenses had been reduced to 23% of the total value of imports (from 64% in 1980). Based on this intense reform schedule, De la Torre (2000) concludes that trade liberalization had been consolidated by 1988. During the same period, Mexico liberalized its capital accounts in attempt to facilitate foreign investment, dramatically reducing the role of the state in both domestic and foreign capital allocation decisions. In 1984 and 1989 laws governing foreign investment were modified, increasing the number of sectors in which foreigners could participate financially and reducing limits on foreign ownership of private assets. Foreign investment in Mexico skyrocketed from US$3.5 billion in 1989 to US$33 billion in 1993 as a result. In addition to trade and financial reforms, the period also witnessed large-scale privatization of state-owned industries, commercial deregulation, and broad tax reform.

The decade starting in the mid 1980s, then, was a period of far-reaching structural reform of the Mexican economy. Combined with multiple stabilization and adjustment programs between 1982 and 1991, reforms (as well as favorable changes in the international economic environment) were successful in achieving a degree of macroeconomic stability. Taking into account trade, financial, commercial, and labor

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9 De la Torre (2000), 501.
10 Ibid, 104.
11 Ibid, 36-54.
market reforms, the Inter-American Development Bank considers Mexico to have crossed the threshold to a market-based economy during the 1990-1991 biennium.\textsuperscript{12} Along with the transition to a market economy and export-led development came significant change in patterns of investment and production as resources flowed to the sector best positioned to take advantage of rapidly expanding trade with the United States—manufactures.

### III. Industrial Change

With the end of the import-substitution industrialization model in Mexico came important shifts within the manufacturing sector of the economy. Trade liberalization and financial deregulation caused investment and capital formation to migrate from industries producing consumer goods for domestic consumption to more capital-intensive ones producing goods aimed at the huge and increasingly accessible North American market. The shift appears thus in both production and investment patterns as well as the composition of exports during the 1980s and 1990s.

Production patterns in the periods just prior to and during the reforms highlight the shift toward more capital-intensive industries. In terms of manufacturing output, foodstuffs and textiles maintained or saw their contributions slightly decrease between the two periods from 1970 to 1985 and 1986 to 1996, while the industry grouping including metal products, machinery and equipment was the only manufacturing group to experience a significant increase.\textsuperscript{13} Dominated by three industries (automobiles, transportation equipment, and electronics), this group was responsible for forty percent of the growth in manufacturing output during the reform period from 1986 to 1996.\textsuperscript{14}

Patterns of investment exhibit similar trends toward relatively capital-intensive industries. Metal products, machinery and equipment saw their shares of investment in manufacturing increase from 20\% to 30\% (principally due to the growth of automobile manufacturing) between roughly the same periods to become by far the largest recipient of investment in manufactures, while food products and textiles experienced slight increases and decreases, respectively.\textsuperscript{15} Additionally, the automobile and electronics industries were the leading recipients of foreign direct investment (FDI) during the 1990s.\textsuperscript{16} Along with marginal foodstuffs and pharmaceuticals, automobiles and electronics were the only industries in which capital accumulation was sufficient to expand their shares of manufacturing output in the period from 1988 to 1994.\textsuperscript{17}

The emphasis on capital-intensive manufactures shows up once again in changes in the composition of exports in Mexico. Trade liberalization and increased foreign investment facilitated not only an influx of new production technologies, but also vast

\textsuperscript{12} IDB (1997) in De la Torre (2000), 502-503.
\textsuperscript{13} Godínez (2000), 399.
\textsuperscript{14} Ibid.
\textsuperscript{15} Máttar (2000), 221-223.
\textsuperscript{17} Máttar (2000), 228-229.
new markets for the fortunate but relatively few industries with the financial,
technological, and human capital resources to thrive in the new, highly competitive
environment. While exports as a percent of GDP increased from less than 10% in 1980
to almost 30% by 1996,18 two-thirds of the growth in manufacturing exports came from
the aforementioned metal products, machinery, and equipment division, the nucleus of
which centers on three familiar industries: automobiles, electric and electronic
equipment, and machinery.19 In a similar estimation based on the “knowledge content”
incorporated in production goods, “very knowledge-intensive” manufacturing exports
grew at a rate more than twice that of other, less knowledge-intensive categories of
manufactures.20

Such concentration of investment and productive activity, not only in a particular
sector of the economy but in a reduced number of industries within that sector, combined
with decreasing links to the rest of the economy has led to the creation of an industrial
export enclave within the Mexican economy. As restrictions on trade and investment
were lifted in the second half of the 1980s and early 1990s, investment poured into a
small, relatively capital-intensive group of manufacturing industries heavily focused on
exporting to the United States. Manufacturers also increasingly imported industrial
inputs rather than purchasing them from Mexican producers, further divorcing them from
the rest of the productive system.21 According to the National Bank of Foreign
Commerce, 75% of Mexican non-*maquila*, non-petroleum exports come from only 1.5%
of Mexican companies, a highly concentrated group indeed.22 Numerous economists
have noted the degree to which Mexico’s export manufacturing sector has come to
resemble an economic enclave whose production and performance have little bearing on
the rest of the Mexican economy as the *maquiladora* business model spread throughout
this select group of industries.23

Thus the structural reforms initiated in the mid-1980s brought with them the
creation of an economic enclave, importing much of its inputs from abroad and exporting
its products to the United States. This small group of relatively capital-intensive
industries, geographically concentrated in the central corridor and along the northern
border, superior in financial and technological resources, has an additional feature
separating it from the rest of the manufacturing sector – significantly higher wages.
Industries that export 60% of their products pay salaries that are 40% higher than the
average manufacturing salary.24 What emerges, then, over the reform period is an
increasingly distinct group of three or four industries with the following characteristics:
relatively high levels of capital and technology, production that is an increasing share of
total manufacturing output, exports increasing as a share of sector GDP, and above
average salaries.

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19 Godínez, 422.
22 See footnote in Hernández Laos (2003), 132.
24 See footnote in Hernández Laos (2003), 132.
Returning to the relationship between economic growth and income inequality, what might be the effect of an increasingly partitioned group of relatively high-wage industries whose revenue is derived principally from exports to the United States?

IV. A Reversing Trend

The story of income inequality in Mexico is a familiar one.\(^{25}\) From the 1960s (the first years for which data is available) to the first half of the 1980s, inequality declined continuously under successive pro-growth/pro-labor administrations during the period of import substitution industrialization. The early 1980s saw an abrupt reversal of that trend as Mexico entered a tumultuous period of successive crises, stabilization and adjustment programs, and neoliberal structural reforms. Inequality rose relentlessly through the 1980s and into the 1990s. (See Figure 2.) Though theories explaining the reversal of the trend vary, the basic trend is consistent across methodologies and data sources.\(^{26}\)

![Figure 2. Mexican Income and Manufacturing Pay Inequality, 1963–2003.\(^{27}\)](image)

\(^{25}\) Contrary to Sala-i-Matín’s (2002) finding of falling global inequality since 1975 based on the aforementioned Deininger and Squire data, Galbraith and Kum (2002) use a more consistent and comparable data set of manufacturing pay and find a global pattern of rising inequality after 1980. They suggest rising interest rates and the detrimental effects of the debt crisis as possible explanations.

\(^{26}\) Using household survey data, De la Torre (2000), Székely (1998), and Hernández Laos (2003) attribute the 1980s rise in income inequality to maldistributions of human capital and skill-biased technological change (SBTC) as new production techniques and technology cause an increase in the relative demand for skilled workers. In a detailed study of wages both across manufacturing industries and firms, Hansen and Harrison (1995) find no support for the SBTC hypothesis as the underlying cause for rising inequality in the 1980s. In a study of manufacturing wage inequality from 1968 to 1998, Calmon, et.all (2001) attribute the trend reversal to slow growth following the debt crisis.

\(^{27}\) The Gini observations (10) available for this period are indicated with markers; the rudimentary curve is based on the author’s interpolations. Gini coefficients are from Hernández Laos (2003), p. 79, and are calculated based on the National Survey of Household Income and Expenditures (ENIGH) conducted by the National Institute of Statistics, Geography, and Information (INEGI). Theil Statistics are from Calmon, et. all (2001) based on data from INEGI and the Banco de Mexico, with post-1998 observations graciously provided by Vidal Garza Cantú.
Leaving the change in trend of inequality aside, another deeper trend reversed shortly thereafter. The increase in inequality that began in the early 1980s did not reverse the decades-long, negative correlation between growth and inequality. The period was marked in general by rising income with corresponding wage compression, yielding falling inequality as measured by the between-sector component of Theil’s “T” statistic. As growth stagnated after 1982, inequality began to rise inexorably – a phenomenon consistent with the downward portion of the Kuznets curve. As we can see from Figure 3, however, the negative relationship between inequality and growth changed polarity over the course of a few short years in or around 1989, after which time periods of growth coincide with rising inequality.

![Figure 3. Manufacturing Inequality and GDP Growth in Mexico, 1980–2004.](image)

As Figure 4 shows, if we plot GDP growth as a function of annual changes in inequality for the whole time period, the pattern seems to exhibit a vaguely negative correlation.

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28 An entropic measure based on information theory, Theil’s “T” statistic is a general measure of dispersion. As a measure of pay inequality, one feature of Theil’s methodology is that (for data that is subdivided into hierarchical groups) overall inequality can be broken down into between-groups and within-groups components. Theil showed that, under certain conditions, the between-groups component is an accurate lower-bound estimate of the composite measure and captures the shape of the overall distribution. For this reason we use here the between-groups component as a measure of manufacturing pay inequality.
Considering the period as a whole, one might conclude that the negative relationship predicted by Kuznets remained intact throughout the entire period under consideration. When observations are separated into periods before and after 1989 as they are in Figures 5 and 6 below, however, the relationship appears somewhat different.

Here the relationship is strongly negative from 1981 to 1989 and, with the exception of 1995 (a year of severe financial crisis following the December 1994 currency devaluation) largely positive for the following period. This trend change occurred at the height of the reform period as discussed above and corresponds, perhaps not coincidently, to the historical moment when Mexico crossed the threshold from a state-dominated to a market-oriented economy.

Correlation coefficients for the series are as follows: -0.71 for the overall period 1981-2003, -0.92 for 1981-1988, and 0.3 for 1989-2003 (excluding the 1995 observation).
It seems likely, then, that structural reform in Mexico brought with it a fundamental change in the previously stable negative relationship between growth and inequality. As financial and human resources were shifted from consumer goods to a reduced number of capital-intensive industries, increasingly divorced from the rest of the economy and increasingly oriented toward external markets, wages in this fortunate group distanced themselves from the rest of the manufacturing sector. Liberalization was the impetus for the shift under the combined effect of the subsequent foreign investment boom (adding billions of dollars to the enclave) and a surge in international trade that simultaneously brought new revenues to firms producing capital goods and diminished their ties to the rest of the Mexican economy. As reform deepened, the benefits of export-led growth accrued to an increasingly concentrated group of industries, leaving behind non-exporting capital goods producers and the majority of the industries producing consumer goods.

Prior to reform, then, the benefits of growth in Mexico were distributed throughout the economy and even disproportionately to low-wage workers, such that periods of growth led to wage compression. Post-reform, growth benefits the fortunate members of the enclave, leading to increases in inequality. Despite an income level one-third that of Great Britain and one-fourth that of the United States, structural reform thus propelled Mexico into that small group of countries on the upward-sloping tail of the augmented Kuznets curve that now, as a result of restructuring, face an unfortunate dilemma: growth with inequality or equality with stagnation or worse?

V. Conclusion

The global trend toward rising inequality beginning around 1980 has spurred much debate. In the context of many developing countries, as in Latin America, the rise coincided with stagnating growth, leaving the negative relationship between changes in growth and changes in inequality (for given levels of income) predicted by Kuznets intact. Until the end of the decade, inequality in Mexico exhibited this trend.

Structural reform changed the relationship, however, bringing new financial resources and technology to a small group of relatively capital-intensive manufacturing industries whose products were increasingly oriented toward the external market in the United States. Trade liberalization facilitated and exacerbated the trend, encouraging investment, increasing returns, and lifting wages in the manufacturing export enclave and divorcing its productive links from the rest of the economy. As the reform program deepened, growth ceased to be a mitigating factor in a highly unequal society in which economic gains previously had been distributed more equitably throughout the wage structure. After reforms were consolidated around 1990, benefits from growth accrued

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30 Alarcón Gonzáles (1994) discusses the possibility that trade liberalization in Mexico could increase inequality if the export strategy focuses on capital goods versus labor-intensive ones. Galbraith (2001) describes inequality driven by sectoral and macroeconomic dynamics in the context of advanced industrial economies.

31 Mátar (2000) describes a process of “deindustrialization” that has occurred outside the maquila sector of the economy in Mexico’s “new industrial paradigm,” pp. 238-241.
instead to the burgeoning manufacturing export sector, thrusting Mexico into a small
group of otherwise rich, advanced industrial countries on the tail of the augmented
Kuznets curve for which growth is associated with rises in inequality.

Further research is needed to confirm the findings of this paper. Does the change
in the relationship hold-up if inequality beyond the manufacturing sector is considered?
Sparse periodicity and industrial classifications distinct from national accounts data limit
the usefulness of Mexican household survey data for such purposes. Data on
employment and wage trends in all economic sectors would, in particular, serve to
confirm or undermine the sectoral dynamics put forth here (and by other authors) and
their role in the evolution of income inequality in Mexico.
References


Forbes, Kristen J., “A Reassessment of the Relationship Between Inequality and Growth”


