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The Contribution of Women to the Macroeconomics Theory In The 20th
Century:

A Study of Three Cases.

A Contribuição Feminina para a Teoria Macroeconômica no Século XX: Um
Estudo de Três Casos.

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**Para a lara,
que essas histórias te inspirem a superar os
obstáculos implícitos em ser mulher.**

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ABSTRACT

The present thesis aims to investigate the contribution of three notable women to the field of macroeconomic theory: Anna Schwartz, Christina Romer, and Eliana Cardoso. This focus is particularly relevant as it represents an innovative contribution to economic literature by expanding the scope of female intellectual biographies in a field historically dominated by men. By examining the intellectual journey of these women, analyzing statistical data related to their works, and placing them within broader academic debates, this research intends to contribute to a deeper understanding of female trajectories in the history of economic thought. The primary objective is to shed light on the contributions of these economists, moving away from the traditional narrative that often overlooks female figures while focusing on male trajectories. The text presents comprehensive biographies for each of the mentioned economists, based on the analysis of their works and research from available archives. Thus, it is expected to provide a more comprehensive and inclusive understanding of the influence of these women in the field of macroeconomic theory.

Keywords: Monetary History, History of Macroeconomics, Gender Inequality.

RESUMO

A presente tese tem como objetivo investigar a contribuição de três mulheres notáveis para a teoria macroeconômica: Anna Schwartz, Christina Romer e Eliana Cardoso. Este recorte é relevante, uma vez que representa uma contribuição inovadora à literatura econômica, ampliando o escopo das biografias intelectuais femininas em um campo historicamente dominado por homens. Ao examinar a trajetória intelectual dessas mulheres, analisando dados estatísticos relacionados às suas obras e contextualizando-as em debates mais amplos, esta pesquisa pretende contribuir para ampliar o conhecimento sobre trajetórias femininas na história do pensamento econômico. O objetivo principal é dar visibilidade às contribuições dessas economistas, desviando-se da narrativa tradicional, que frequentemente negligencia figuras femininas e se concentra nas trajetórias masculinas. O texto apresenta biografias abrangentes para cada uma das economistas mencionadas, com base na análise de suas obras e na pesquisa de arquivos disponíveis. Espera-se, assim, proporcionar uma compreensão mais completa e inclusiva da influência dessas mulheres no campo da teoria macroeconômica.

Palavras-chave: História Monetária, História da Macroeconomia, Desigualdade de gênero

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INTRODUCTION

At the turn of the 20th century, the discipline of economics was undergoing a transformative period, seeking to define its scope and establish itself as an academic field within American academia (Breslau, 2003). During its early establishment, women contributed to the field, albeit in smaller numbers compared to men. Regrettably, as the century progressed, women's representation in economics dwindled (Forget, 2011). The issue of gender misrepresentation in economics persists today, prompting recent research in the History of Economic Thought to shed light on this problem.

Notably, the most significant period of women's participation in academic economics research occurred in the early 20th century, marked by greater openness to diverse interpretations and research methods. This era witnessed a higher number of articles and books authored by women and an increased number of women earning doctoral degrees (Madden, 2003; Dimand, 1995). However, during the mid-20th century, women's participation in the field declined significantly. A resurgence of women's involvement began only in the 1970s, largely attributed to affirmative actions initiated by the Committee on the Status of Women in the Economics Profession (CSWEP), established in 1971 (Forget, 2011).

The role of gender influenced women's decisions regarding careers in economics and the specific subfields they pursued, as indicated by specialized literature (Dimand, 1995; Madden, 2003; Forget, 2011). Home economics and social assistance emerged as fields attracting a higher concentration of women trained in economics, especially after World War II when women's overall participation in the field was diminishing (Forget, 2011). However, some women persevered in conducting research in core economics despite potential adversities. This paper profiles three such researchers—Anna Jacobson Schwartz, Christina Romer, and Eliana Cardoso as exemplars of success in overcoming obstacles.

Some studies in the history of economic thought have presented estimates of female contributions that tend to underestimate their academic publications during the 20th century, partly due to inadequate measurement approaches (Madden, 2003; Forget, 2011).

Recent data surveys have provided more accurate estimates of women's contributions. To mention a few, Dimand (1995) identified a pattern of significant presence of women publishing in economics at the start of the 20th century, although this trend gradually declined over the century. Forget (1995) documented 137 doctoral theses by women in the United States between 1912 and 1932. Peter Groenewegen and Susan King (1994) listed 112 women responsible for publishing 222 articles in major economics journals in the United States and the United Kingdom between 1900 and 1939. Madden (2003) noted that among approximately 3,880 authors listed in economics journals between 1925 and 1939, 209 (5.4%) were women. From the 1920s onward, women increasingly focused their academic publications on home economics and social assistance (Forget, 2011), migrating from economics to those areas. This is the main reason for the drop observed in women's participation in economics, according to Forget (2011).

Forget (2011) divides women's participation in the American academic economics landscape in the 20th century into four distinct phases: pre-World War I, the interwar period, post-World War II until the 1970s, and the 1970s until the end of the century. This periodization facilitates examining how each historical period and its unique characteristics influenced women's professional roles.

During the first phase, women who contributed to economics in the United States before World War I represented a minority within the profession. Nevertheless, they attended professional conferences, obtained bachelor's and graduate degrees, and authored books, papers, and monographs on topics similar to those explored by their male counterparts.

The interwar period saw the emergence of professional training in social assistance and domestic economics, attracting many women with a background in Economics. This shift redirected some women from academic careers to positions primarily in government agencies. The decline in women's academic participation during this period resulted from two factors: societal pressures and prejudices that discouraged women from pursuing academic careers and opportunities to work in government roles related to social assistance and domestic economics. The percentage of women earning economics doctorates dropped from 8.5% in the 1920s to 4.2% in the 1950s (Chamberlain, 1988, 227, cited in Forget, 2011).

The third phase spans from the end of World War II until the 1970s. During this period, women began to secure more positions alongside men in universities, and their contributions to academic journals increased, regaining their presence in these publications.

However, the improvement observed in the 1970s and 1980s has not continued. Lundberg and Stearns (2019) claim that the participation of women in the profession has stalled and stress the lack of effort toward reducing gender inequality in economics when compared to other disciplines such as sciences, mathematics, and engineering. The authors conclude that the differential assessment of men and women is the main reason behind the stalled progress. This different assessment results in gendered institutional policies and bias in the tenure process. Women may face barriers to promotion and tenure that men do not face due to factors such as gendered expectations of performance, gendered evaluation of job candidates, and gendered norms and practices within the field of economics.

The authors assert that a growing body of evidence demonstrates the presence of implicit bias within academia, with potential repercussions for both hiring and promotion decisions across various dimensions. To illustrate, when faculty members assess curriculum vitae bearing names assigned at random, there is a notable tendency to evaluate and select male candidates more favorably for tenure-track positions (Lundberg & Stearns, 2019, p.18). In a specific instance within the field of economics, the authors highlight the case of Italy. When equally productive female economists in Italy are subjected to evaluation by an all-male promotion committee, they face a reduced likelihood of being promoted to the positions of associate or full professor. However, this gender disparity disappears when women are assessed by a committee consisting of both male and female members (Lundberg & Stearns, 2019, p.18).

Additionally, Madden (2002, pp.5-6) highlights some challenges associated with estimating the participation of women in published works, factors that can either underestimate or overestimate the true number of female contributions. These challenges encompass gender-neutral names, geographical or national considerations, male-female coauthors, changes in marital status, and alterations in last names.

Gender-neutral names present a significant hurdle in ascertaining the gender of an author, leading to potential misclassifications. Additionally, considerations of geography and nationality may inadvertently exclude non-Western female economists from the analysis, further complicating the accurate assessment of women's contributions (Madden, 2002).

The issue of male-female coauthors is a complex one, as determining the precise extent of each author's contribution to a collaborative work can be challenging. As a result, including such works in research may introduce a bias, potentially leading to an underrepresentation of female contributions in instances where the contribution of a female coauthor is incorrectly attributed to or appropriated by male authors (Madden, 2002).

The title of this thesis explicitly focuses on women's history rather than framing it as a "gender" discourse. While the use of the "gender" concept doesn't inherently imply an endorsement of positions on inequality or power dynamics, nor does it explicitly pinpoint the historically marginalized group (Scott, 1986), the term "women's history" takes a clear and assertive political stance by recognizing women as legitimate historical agents, departing from traditional paradigms (Scott, 1986). Conversely, adopting the "gender" concept incorporates women without singling them out explicitly, which may give the impression of posing a less evident challenge (Scott, 1986). Hence, the adoption of the "gender" concept, since it is a more neutral stance, is one of the aspects that can be understood as the pursuit of academic validation for feminist studies (Scott, 1986).

To have an idea of how the terms "Women" and "Gender" have been discussed in the History of Economics, we turn our attention to some statistics. The subpar representation of women in economics is reflected in the small attention paid to their contributions. To gauge the evolving landscape of this discussion, let's examine some numbers from two prestigious journals in the field. In 2023, a search for the term "women" in the journal "History of Political Economy" (HOPE) returned 503 results, marking a notable increase from the 427 results recorded in 2019. Likewise, in the "Journal of the History of Economic Thought" (JHET), the same search yielded 211 citations in 2023, a substantial rise from the 90 citations noted in 2019. A similar trend is observed when searching for "gender," with HOPE registering 158 records in 2023 compared to 119 in 2019. In the case of JHET, there are 79 results for "gender."

However, the situation differs when we focus on the female authors featured in this thesis. Searching for "Anna Schwartz" in the HOPE journal yields 114 citations, mostly linked to her seminal work, "A Monetary History." Conversely, "Christina Romer" garners six citations, while "Eliana Cardoso" receives one citation. When we compare these figures to those of their most frequently cited coauthors, we find 51 citations for Michael Bordo (Anna Schwartz's coauthor), 76 citations for "David Romer" (Christina Romer's coauthor), and 20 for "Rudiger Dornbusch" (Eliana Cardoso's coauthor).

The results for the JHET paint a similar picture: Anna Schwartz accumulates 30 results, "Christina Romer" acquires 4, and "Eliana Cardoso" has no results. Among their coauthors, "Michael Bordo" amasses 72 results, "David Romer" commands 114, and "Rudiger Dornbusch" secures just 3.

These findings illuminate the ongoing gender disparities in economics and emphasize the need for greater recognition of the contributions made by women in the field. To help bridge this gap, an intellectual biography of the aforementioned women will be provided throughout three chapters. They were chosen as symbolic representatives of women's impact on the field. Each chapter encompasses a concise biography and bibliometric analysis of the subject, a synthesis of their most renowned works and their integration into the economic discourse, and a section with an overall look over the remaining contributions, illuminating their intellectual trajectories and additional contributions.

The selection of these economists is underpinned by the influence they have exerted on the realm of macroeconomics. Intriguingly, the intellectual contributions of Christina Romer and Eliana Cardoso have received comparatively limited attention within the existing literature, barring Anna Schwartz, who has some recognition for her work. Notably, while there exists a volume that pays homage to Anna Schwartz's contributions, titled "Money, History, and International Finance: Essays in Honor of Anna J. Schwartz" (Bordo, 1989), it comprises only five papers, thus leaving ample room for a more comprehensive exploration of her multifaceted body of work. Consequently, this thesis not only avoids redundancy but also underscores its originality.

Furthermore, it is noteworthy that all three selected economists have made substantial impacts within the subfield of monetary economics, whether through their historical perspectives on money or their contributions to monetary theory. This thematic alignment reinforces the choice of these economists and aligns with the overarching theme of the thesis. Significantly, both Schwartz and Romer are well-recognized figures in the annals of economic history. At the same time, Eliana Cardoso has made notable contributions to Brazilian economics and the debate about inflation during the 1980s. Cardoso lived the American academic experience and is a product of an American University, just as Anna Schwartz and Christina Romer. Hence, this thesis is mainly centered on women's experiences and their production within the American academic context.

The task pursued in this research assumes greater significance when contrasted with the larger body of literature centered around male economists. While this preponderance reflects the historical dominance of men within the field, it is imperative to disrupt this pattern and broaden our comprehension of the contributions made by women. It is crucial to emphasize that the intention here is not to depict these women as fragile or underprivileged but rather to illuminate the narratives of thriving economists. The aim is to unveil narratives that deserve attention yet have remained largely untold, enriching our understanding of these remarkable economists and broadening our knowledge base about women's contributions.

1 – ANNA SCHWARTZ

This chapter presents an intellectual biography of Anna Schwartz, starting with an exploration of her personal and early academic journey. It aims to construct a narrative that unveils the path she took to become one of the pioneering economists of monetarism, aiming to provide insight into Anna Schwartz beyond her seminal work, "A Monetary History." To achieve this objective, the chapter will illuminate her early contributions, emphasize her role in shaping "A Monetary History," and subsequently delve into her post-"A Monetary History" work. In doing so, we aim to reveal the lesser-known facets of Anna Schwartz's contributions, contributing to a broader understanding of women's roles in the field of macroeconomics.

1.1 A Brief Biography

Anna Jacobson was born in New York City on November 11, 1915, into a family of Jewish immigrants from Eastern Europe (Lipsey, 2021). Pauline (Shainmark) Jacobson and Hillel Jacobson, her parents, were the proud heads of a family that included five children, with Anna occupying the third position. Hillel Jacobson, Anna's father, was the manager and oversaw rabbinical supervision of the kosher meat department at Swift and Co (Lipsey, 2021).

Raised in New York, Schwartz enrolled at Walton High School in the Bronx during the challenging era of the Great Depression (Goldin, 2020). During her time at Walton, Schwartz encountered an economics class that left an indelible mark on her life and laid the foundation for her future career (Goldin, 2020). Impressed by what she described as "vital questions" raised in the class, Schwartz was inspired to delve deeper into economics, a decision that would shape her academic and professional trajectory (Schwartz, 2001).

Anna also crossed paths with Isaac Schwartz, her lifelong partner, during this time. They met during her attendance at Camp Achvah, a Hebrew camp affiliated with the Hebrew afternoon high school that she attended (Lipsey, 2021). They married in 1936, and she adopted the name "Anna Jacobson Schwartz," under which she gained fame. Isaac was the controller for an importing firm until his retirement (Lipsey, 2021). Isaac passed in 1999 (Hershey, 2012)

After high school, Schwartz pursued her studies at Barnard College, where she received the Bachelor of Arts award in 1934. At Barnard, she was elected Phi Beta Kappa in 1934. She

was awarded the Murray Fellowship for the academic year 1934–1935 (Lipsey, 2021), marking the two first of the many prizes she would accumulate throughout her career¹.

During her College years, she was Arthur Gayer's student, a British economist teaching in the United States who would later become a Professor at Columbia. In the economics department during her undergraduate studies, there were four individuals, comprising three women, and Arthur Gayer was the sole male among them (Schwartz, 2004). Notably, Schwartz observed that except for her Statistics Professor, the other two professors seemed to have made limited advancements in their understanding of economics since completing their graduate studies. In Schwartz's assessment, Gayer was "the most knowledgeable of the group" (Schwartz, 2004). Consequently, she opted to collaborate with him, and it was under Gayer's guidance Anna Schwartz was introduced to the realm of monetary economics, a pivotal influence that significantly shaped her early work, particularly in her exploration of the British economy.

Following her collaboration with Arthur Gayer during her college years, Schwartz pursued post-graduate studies in economics at Columbia University. While at Columbia, she attended classes taught by James Waterhouse Angell from 1934 to 1935, a figure with a background in monetary issues. Despite his expertise, Schwartz characterized Angell's classes as resembling a course of readings without a clearly defined structure. Much of the material covered during this period focused on the writings of John Maynard Keynes from the 1920s to 1935, particularly emphasizing his pre-General Theory work. Angell later became an initial participant in the project that produced "A Monetary History."

¹ Throughout her academic journey, Schwartz garnered a multitude of honors and accolades, in addition to those previously mentioned. The remaining distinctions detailed in her Curriculum Vitae (Schwartz, 2010) include:

- 1-Fellow of Committee on Research in Economic History, 1945.
- 2- Honorary Visiting Professor, City University Business School, London, 1984-2002.
- 3-President, Western Economic Association, 1987-88.
- 4-Doctor of Letters (Honoris Causa), University of Florida, 1987.
- 5-Doctor of Arts (Honoris Causa), Stonehill College, North Easton, MA, 1989.
- 6-Doctor of Laws (Honoris Causa), Iona College, 1992.
- 7-Doctor of Laws (Honoris Causa), Rutgers University, 1998.
- 8-Doctor of Letters (Honoris Causa), Emory University, 2000.
- 9-Doctor of Humane Letters (Honoris Causa), Graduate Center, CUNY, 2000.
- 10-Doctor of Laws (Honoris Causa), Williams College, 2000.
- 11-Doctor of Humane Letters (Honoris Causa), Loyola University of Chicago, 2003.
- 12-Doctor of Science (Honoris Causa), City University, London, 2006.
- 13-Distinguished Fellow, American Economic Association, 1993.
- 14-Staff Director: U.S. Gold Commission, 1981-1982.
- 15-Honorary Fellow, Institute of Economic Affairs, 1997.
- 16-Fellow, American Academy of Arts and Sciences, 2007.

In 1935, Schwartz earned her master's degree from Columbia, but her Ph.D. was not conferred until much later in 1964. After completing her master's degree, Schwartz briefly worked at the U.S. Department of Agriculture in early 1936, engaging in field research and data collection for surveys—a significant foray into research projects (Schwartz, 2004). Subsequently, she joined the Columbia University Social Science Research Council, marking the beginning of her collaboration with Gayer and Rostow in the British project. In this capacity, her responsibilities included gathering and constructing new data (Capie & Wood, 1989). This undertaking later emerged as a crucial element of her work in "A Monetary History of the United States," solidifying her prominence in the field of quantitative economic history.

In 1938, Anna and Isaac Schwartz joyfully welcomed the first of their four children into their family. Jonathan Schwartz was born on March 15, 1938, and became the chief actuary for the City of New York. Subsequently, they welcomed two daughters into the family. Paula Berggren, born on July 10, 1942, pursued a career as a professor of English at Baruch College, City University of New York, while Naomi Pasachoff, born on January 27, 1947, carved her path as a writer specializing in young adult biographies, Jewish education books, and middle school science textbooks. The youngest of the four, Joel Schwartz, born on August 17, 1950, found his professional calling as a National Endowment for the Humanities program officer. Despite the demands of raising four children within 12 years, Anna Schwartz never took breaks from her career to raise children. Instead, she enlisted full-time help within her home, facilitating her continuous engagement and dedication to her professional pursuits².

In 1941, Anna Schwartz joined the National Bureau of Economic Research (NBER) as a research associate, and she continued to be actively engaged there until her passing, opting not to officially retire. In the initial years of her tenure at the NBER, an incidental encounter occurred with Milton and Rose Friedman when they sought to borrow a stroller from Schwartz. This casual meeting stemmed from the challenges posed by the scarcity caused by World War II. Nevertheless, it wasn't until 1948 that their notable collaboration, culminating in *A Monetary History*, truly commenced.

² All the information about Anna Schwartz's children were kindly given by her granddaughter Eloise Pasachoff in written communication.

"A Monetary History of the United States, 1867-1960" (Friedman & Schwartz, 1963) stands out as the most renowned and frequently cited work in Anna Schwartz's illustrious career. However, her journey as a dedicated researcher traces back to the early years of her academic life. One of her earliest published works was the co-authored paper titled "British Share Prices, 1811-1850" (Gayer, Schwartz, & Finkelstein, 1940)³ was derived from Anna Schwartz's inaugural published book, "The Growth and Fluctuation of the British Economy, 1790-1850" (Gayer, Rostow, & Schwartz, 1953). Paradoxically, the book was published several years after the release of the paper.

Arthur D. Gayer, one of the book and paper's authors, was the first of many collaborators Schwartz throughout her career. They had been collaborating on the issue of British economic fluctuations since at least 1936. The British economy became her first area of expertise, as an examination of her early years will prove.

Schwartz also held part-time positions at a few universities. Her teaching experience included roles as an instructor at Brooklyn College in 1952 and Baruch College from 1959 to 1960. She also served as an adjunct Professor of Economics at Hunter College of the City University of New York from 1967 to 1969 and at the Graduate School of Arts and Science at New York University from 1969 to 1970.

Additionally, she held the position of Adjunct Professor of Economics at the Graduate School of the City University of New York starting in 1986, where she engaged in research activities during this period (Schwartz, 2000). Although Schwartz's formal role as a university professor was limited⁴, she had numerous unofficial students at the NBER whom she encouraged and advised (Rockoff, 1989). In 1964, she finally obtained her PhD from Columbia University, after Milton Friedman pressured Columbia and convinced Arthur Burns to accept her famous 1963 joint work with Friedman as her thesis⁵. The delay in obtaining her Ph.D. was one of the factors that made it challenging for Schwartz to secure a permanent position as a Professor. Had she completed her Ph.D. earlier, as originally intended through her collaboration with Rostow and Gayer, she might have had a better opportunity to pursue a university career⁶.

In addition to her research, Schwartz actively participated in various editorial roles. She was a member of the Board of Editors for the American Economic Review, the Journal of

³ Isaiah Finkelstein assisted the authors in the book's research.

⁴ In an interview provided by Michael Bordo he mentions that Schwartz never had any advisees.

⁵ This information was provided by Bordo in an oral interview.

⁶ This information was provided by Bordo in an oral interview.

Money, Credit, and Banking, and the Journal of Monetary Economics. Furthermore, she contributed as a book reviewer for economics publications in *The Key Reporter* (Bordo, 1989). Schwartz was a regular participant in the Carnegie Rochester Conference Series on Public Policy and was a member of the Shadow Open Market Committee (Bordo, 1989). Another notable achievement in her career was serving as the staff director of the U.S. Gold Commission for one year from 1981 to 1982, where she played a significant role in writing the Gold Commission Report. In 1987-1988, Anna Schwartz was president of the Western Economic Association.

In celebration to her productive and lengthy career, on October 6, 1988, the National Bureau of Economic Research (NBER) sponsored a conference in New York City. The conference aimed to honor Anna Schwartz and resulted in the presentation of a collection of her papers compiled in the book "Money in Historical Perspective." Michael Bordo and Milton Friedman selected the papers for this volume, and during the conference, her contributions were discussed by several prominent economists. The conference debates were also documented in a subsequent book titled "Money, History, and International Finance: Essays in Honor of Anna J. Schwartz," organized by Michael Bordo and published in January 1989.

Addressing the issue of being a woman in economics during the 1930s, when her academic journey commenced, Schwartz remarked that she did not perceive her situation as exceptional. She encountered many women pursuing economics degrees at her college and had female colleagues at the NBER (Schwartz, 2004). This sense of not being an exception may have been influenced by the broader context of the time. Barnard College, where she studied, was an institute of liberal arts for women, and during the early 20th century up to the Second World War, women were more prevalent in the field of economics (Forget, 2011; Madden, 2003).

However, Schwartz acknowledged that in the early 1940s, while pregnant with the third child, she heard from Arthur Burns, who later became the president of the NBER in 1957, that she should not have more children as it would leave her with insufficient time for other pursuits⁷ (Schwartz, 2004, p. 404). She also acknowledged that her ability to work while raising a family was facilitated by having assistance at home, including a live-in caretaker who played a maternal role for her children (Schwartz, 2004, p. 404). Her perspective on gender may also

⁷ In a private conversation Bordo assumed that Burns and Schwartz had a difficult relationship.

have been influenced by her non-identification with "liberal left-wing" views (Schwartz, 1993, p. 9).

Despite being a prominent and recognized woman in monetary economics, Anna Schwartz did not perceive gender as a significant obstacle to her academic trajectory.

In her prolific career, Schwartz bequeathed a noteworthy legacy through a substantial body of work comprising 156 publications⁸. This comprehensive collection encompasses ten books, 110 articles, and 36 book reviews, showcasing the breadth and depth of her scholarly contributions from 1947 to 2015, including two posthumous papers. We will next delve into some figures to better illustrate the extent of her contributions. Table 1⁹ below presents a list of Anna Schwartz's most cited works. Notably, despite her extensive number of published works, only a few garnered significant attention in terms of citations, highlighting that most researchers focused on a limited number of her works.

The significance of "A Monetary History" is underscored by its first place on the list. The book totals 5750 citations and is a milestone in the economic literature and the author's career. The second most cited work, "Monetary Trends In The United States And The United Kingdom: Their Relation To Income, Prices, And Interest Rates, 1865-1975," is a collaborative effort with Friedman that forms an integral part of the broader research initiative leading to the creation of "A Monetary History." The third most cited work, "The Growth and Fluctuation of the British Economy, 1790-1850," is her first published book, coauthored by Arthur Gayer and Walt Rostow.

⁸ According to her *Curriculum Vitae* available at the NBER website: <https://www2.nber.org/vitae/vita548.htm>.

⁹ For the complete relation of her publications check Table 1 in the appendix. That table shows all of her work listed in the Jstor platform (for books citations) and the Web of Science database (used to access citations of the articles) .

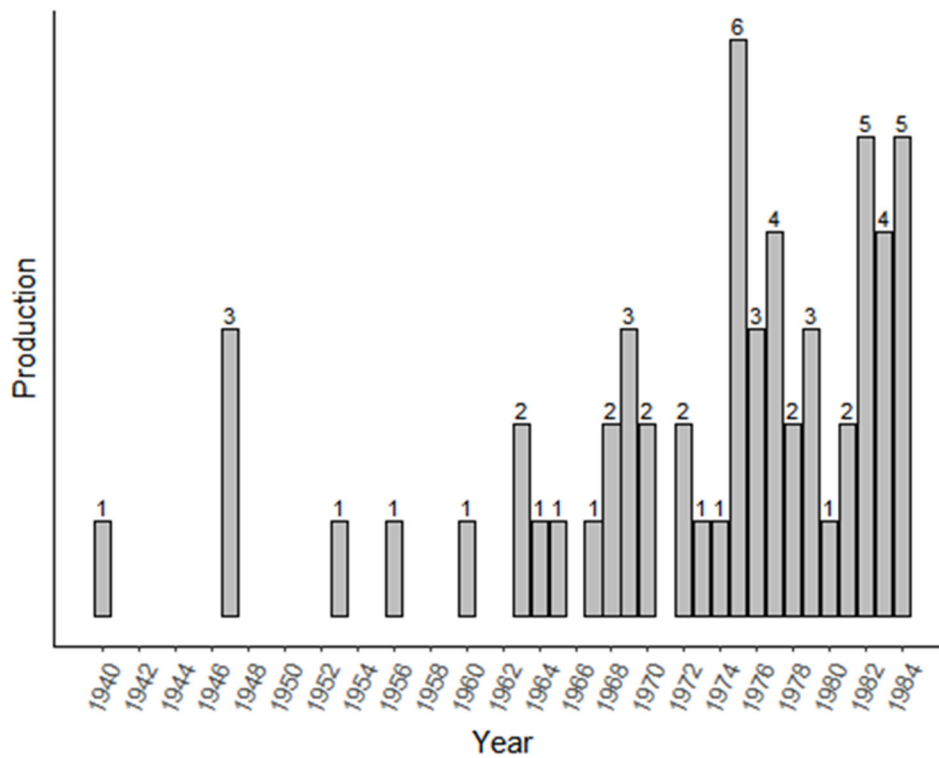
Table 1 – Top 10 Anna Schwartz’s publications

Rank	Authors	Title	Citations
1	Friedman, M.; Schwartz, AJ	A Monetary History of the United States	5750
2	Friedman, M.; Schwartz, AJ	Monetary Trends In The United States And The United Kingdom	763
3	Gayer, AD; Rostow, WW; Schwartz, AJ	The growth and fluctuation of the British Economy, 1790-1850	626
4	Friedman, M; Schwartz, AJ	Has Government Any Role In Money?	100
5	Schwartz, AJ	From Obscurity to Notoriety: A Biography of the Exchange Stabilization Fund	22
6	Bordo, MD; Schwartz, AJ	Clark Warburton - Pioneer Monetarist	18
7	Schwartz, AJ	The Beginning Of Competitive Banking In Philadelphia, 1782-1809	18
8	Nelson, E; Schwartz, AJ	The impact of Milton Friedman on modern monetary economics: Setting the record straight on Paul Krugman's Who was Milton Friedman?	16
9	Bordo, MD; Humpage, OF; Schwartz, AJ	The Evolution of the Federal Reserve Swap Lines since 1962	15
10	Bordo, MD; Humpage, OF; Schwartz, AJ	The Federal Reserve as an Informed Foreign Exchange Trader: 1973- 1995	9

Source: Jstor and Web of Science.

In evaluating Schwartz's output over 70 years, the designated timeframe from 1940 to 2010 has been delineated and visually represented in two distinct graphs, presented as Figures 1 and 2. While the concentration of years may appear more pronounced in Figure 1, this selection is grounded in the periods of actual production. Thus, the division reflects 25 years of the active output in Figure 1 and 25 years in Figure 2. The works considered in the graphs are books, articles, chapters, and reviews.

Figure 1 – Anna Schwartz: Production from 1940-1984



Source: Anna Schwartz (2010)

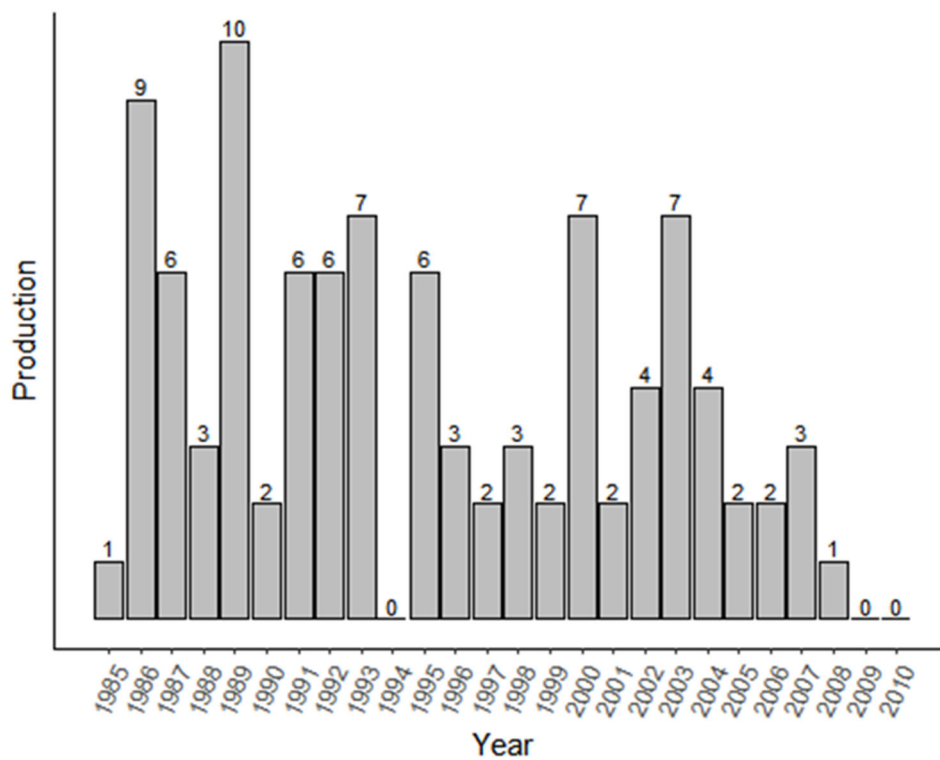
Figure 1 illustrates a sparsity of publications from 1940 to 1984, while Figure 2 portrays the years from 1985 to 2010. Examining Figure 1, it becomes evident that in 1963, Schwartz's scholarly output experienced a significant surge, culminating in a peak of 6 publications in 1977. The initial publication gap from 1941 to 1946 is likely attributable to the impact of World War II on the publishing industry, marked by paper rationing enforced from 1940 to 1949 and a scarcity of workforce (Thomson, 2016).

The subsequent hiatus from 1947 to 1962, despite a few scattered publications during this period, can be attributed primarily to Schwartz's unwavering commitment to the project that led to the creation of "A Monetary History," which was initiated in 1948. Commencing in 1963, following the completion of an extensive research phase, there is a discernible shift towards greater consistency in publication output. Schwartz consistently releases one work nearly every year from this point onward.

Figure 2 depicts a near-annual rhythm of scholarly production, except for the years 1994, 2009, and 2010, during which no publications were recorded. The zenith of Schwartz's

career productivity occurred in 1989, marked by the publication of ten works. Figure 1 displays a total of 58 publications over 25 years of active output, resulting in an average of 2.32 publications per year. In contrast, Figure 2 showcases 98 publications over 25 years, yielding an average of 3.92 per year. The overall trend suggests a substantial increase in productivity in Figure 2 compared to Figure 1.

Figure 2 – Anna Schwartz’s Production from 1985-2010



Source: Anna Schwartz (2010)

Regarding the authorship of her work, many of the most cited ones were coauthored by men. Table 2 lists her most frequent collaborators. Her collaboration with Friedman produced her most renowned work and established new professional connections as Friedman's students sought her collaboration in the future. Michael Bordo, who Friedman in Chicago mentored, is a prime example. Upon completing his PhD, Bordo joined the NBER, further strengthening the network of economists influenced by the fruitful partnership of Anna Schwartz and Milton Friedman (Schwartz, 2004). Once at the NBER, Bordo started to ask and propose collaborations with her since they had interests in common and a fruitful and long intellectual relationship.

Schwartz and Cagen probably connected through Friedman in Chicago. They mentored Phillip Cagan, and he was also involved in the NBER money and business cycle program that resulted in *A Monetary History of the United States, 1867-1960*.

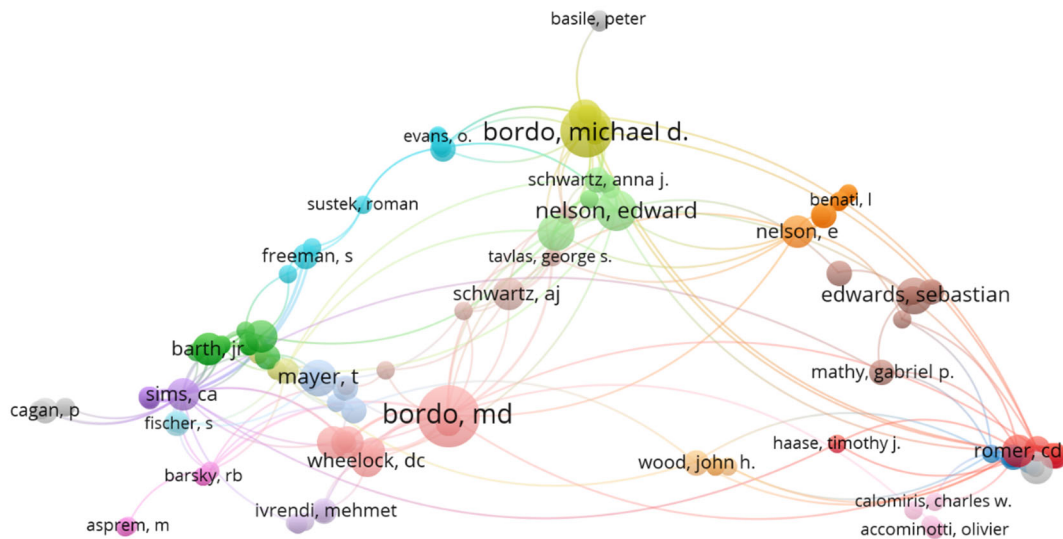
Table 2 - Collaborations

Position	Author	Collaborations
1	Michael Bordo	16
2	Milton Friedman	7
3	Ehsan Choudhri	4
4	Allan Meltzer	2
5	Owen Humpage	2

Source: Scopus

Figure 3 was produced with the VOS viewer software. It shows the cluster of authors that cite her work more often. The larger clusters belong to those who cite Schwartz's work more often. Circles of the same color indicate that the authors are engaged in similar research themes. Notably, Bordo and Edward Nelson are among her frequent collaborators. In addition, these two authors, along with Tavlas, have contributed bibliographical materials and papers in her honor, reflecting the esteem she holds in the academic community. It's worth mentioning that some instances of self-citation can also be observed in her body of work.

Figure 3 – Clusters of authors that cite Schwartz’s works.



Source: Web of Science

Anna J. Schwartz passed away in New York in 2012 at the age of 97, having lived for nearly a century. During her exceptionally active intellectual life, she dedicated 76 years to studying and researching economics. This period spanned from 1935, when she earned her master's degree in Economics from Columbia University, until her passing in 2012.

The following sections will provide an account of her academic life, divided into pre-monetary history, research development, and post-monetary history, to contribute to the field of the History of Economic Thought by highlighting this remarkable economist's intellectual journey.

1.2 Early career

It is challenging to gauge the extent to which Anna Schwartz's early exposure to Keynesian theory, particularly during her master's studies, significantly influenced her initial research perspective and her comprehension of economic phenomena. The Keynesian influence is evident in her early collaborative work, “The Growth and Fluctuation of the British Economy, 1790–1850: An Historical, Statistical, and Theoretical Study of Britain’s Economic

Development” (Gayer, Rostow & Schwartz, 1953). In this book, the authors paid little attention to monetary issues as the primary cause of business cycles. Instead, they viewed them as consequences of shifts in the demand for consumer goods (Tavlas, 2013), a Keynesian interpretation. However, It's important to note that Rostow played a more substantial role in shaping the Keynesian narrative, while Schwartz primarily focused on the data-related aspects of the work.

This collaborative project marked Schwartz’s first published book and was intended to be her Ph.D. dissertation. The collaboration began while she was affiliated with Columbia University’s Social Science Research Council (Tavlas, 2013). The research journey began in 1936 when Schwartz was 21 years old and was completed in the early 1940s. Despite its conclusion, the book's publication was delayed until 1953, an unfortunate delay attributable to circumstances that will be elucidated later.

The British study project was conceived by Arthur Gayer, who had been investigating the behavior of the English economy’s business cycle since his 1930 Oxford thesis, “Industrial Fluctuation and Unemployment in England, 1815-1850.” Gayer transformed this research into a long-term project (Crouzet, 1977). Regarding the division of responsibilities for this research, Gayer was the driving force behind the project and invited Schwartz to join. She became involved in the study from its inception in 1936 and was primarily responsible for essential data collection and statistical analysis. Walt Rostow joined the team in 1939 and played a crucial role in shaping the historical narrative in the first volume and the general analysis in the first part of the second volume (Capie & Wood, 1989). Although Gayer initiated the project, Schwartz (2004) contends that Rostow was the true leader of the study, with Gayer contributing little to the final product.

The book encompassed both existing data and series and newly constructed raw data and series, totaling around two hundred variables, including output, prices, labor market indicators, trade, and finance (Tavlas, 2013). One of the piece’s most notable contributions was creating a new price series for domestic and imported commodities, known as the Gayer-Rostow-Schwartz (GRS) indices. The indices enjoyed enduring popularity among students of British economic history and remain among the most frequently cited price indexes for measuring the standard of living in Britain for the period they cover (Capie & Wood, 1989). They were developed using earlier data from Siberling (1923), who compiled data on wholesale prices (Williamson, 2013).

Regarding its methodology, the book utilized what came to be known as the “NBER method,” a widely popular procedure for identifying economic cycles in the 1930s and 1940s (Capie & Wood, 1998). The “NBER method” was based on the foundations of the technique described by Mitchell and Burns (1946) in their book, “Measuring the Business Cycle,” which became a standard reference for this methodology (Hammond, 1996). Although it’s important to note that the NBER itself did not develop this method, the author's decision to employ it is justifiable. This is not only because it was a commonly utilized approach during that era but also due to the authors’ close proximity to Mitchell and Burns, who were professors at Columbia University and affiliated with the NBER. To gain a deeper understanding of the cycles identified using this procedure, it is essential first to comprehend the definition of a cycle within this framework. In Mitchell and Burns’ own words:

Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration, business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar character with amplitudes approximating their own. (Mitchell & Burns, 1946 p.3)

This definition aims to clarify the concept of business cycles, distinguishing them from other types of economic fluctuations predating the advent of business activities. The conventional NBER method for identifying business cycles is comprehensively outlined in Chapter 2 of “Measuring Business Cycles” (Mitchell & Burns, 1946). Given the limited scope of this analysis, only a concise overview is presented in this section.

To summarize the process of measuring cycles for simplicity, it can be broken down into two fundamental steps. The initial step involves identifying the cyclical peaks and troughs within the observed economic variables. Subsequently, the second step entails assessing the

recurrence of these movements across individual series. If such recurring patterns are observed, it indicates the presence of an aggregate business cycle or reference cycle. Once the reference cycle is established, it is restricted by its reference dates. Subsequently, the average monthly values during each reference cycle are calculated and expressed as percentages of this base value, facilitating homogeneous comparisons. These calculated percentages are termed ‘reference-cycle relatives.’

Moving forward, each series is examined to detect wave-like movements with durations on a similar scale as business cycles. These specific, series-specific cyclical trends are called ‘specific cycles.’ The turning points of specific cycles are delineated, followed by the computation of average monthly data values during each cycle. These values are then converted into specific cycle relatives. Comparisons between the specific cycle and the reference cycle are made retrospectively, considering the entirety of the evidence available.

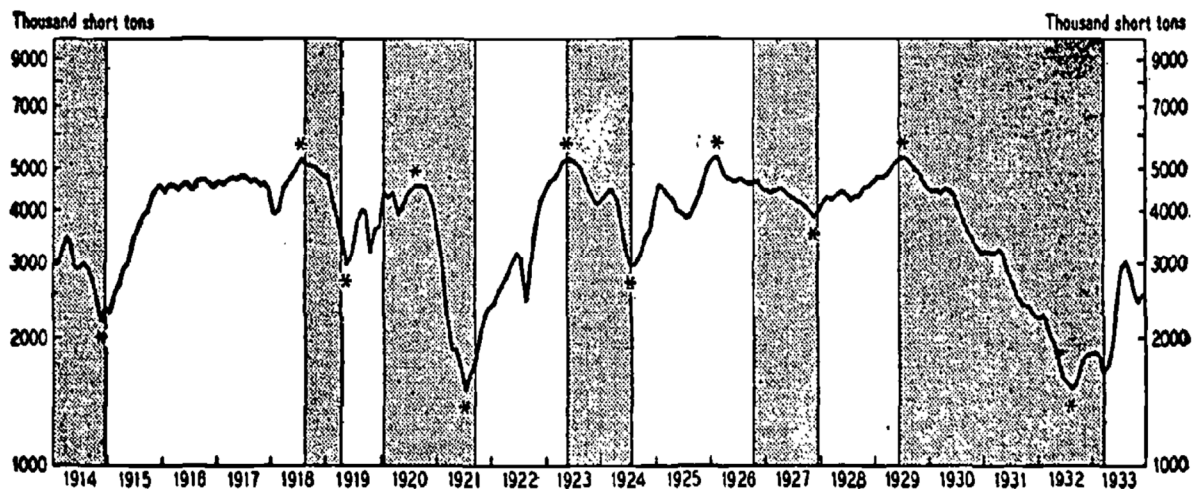
Figure 4 – Coke production in the United States (1914-1933)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1914	2973	3147	3476	3364	2940	2897	2991	2927	2797	2531	2193	2348
1915	2281	2555	2675	2897	2990	3410	3613	3873	3959	4320	4475	4553
1916	4381	4564	4554	4425	4581	4581	4392	4667	4684	4655	4593	4499
1917	4664	4523	4672	4720	4693	4778	4731	4611	4693	4542	4577	4452
1918	3855	3957	4415	4639	4801	4941	5228	5067	5033	5017	4844	4730
1919	4763	4126	3773	3335	2977	3173	3777	3987	3943	3157	3600	3624
1920	4329	4261	4360	3885	4031	4299	4412	4536	4520	4496	4284	3971
1921	3314	2886	2203	1855	1860	1679	1497	1637	1719	2076	2231	2338
1922	2391	2512	2658	2798	2979	3180	3038	2413	2927	3638	4145	4342
1923	4650	4695	4853	5174	5250	5216	5076	4901	4641	4362	4132	4107
1924	4278	4493	4386	4199	3581	3108	2923	2936	3132	3466	3596	4182
1925	4599	4458	4259	4204	3950	3900	3804	3838	4102	4333	4836	5087
1926	5244	5280	4746	4719	4643	4635	4721	4606	4578	4604	4665	4495
1927	4471	4426	4521	4553	4389	4320	4219	4219	4112	4027	3887	3991
1928	4249	4348	4276	4365	4450	4413	4286	4344	4332	4524	4569	4688
1929	4822	4798	4889	5005	5250	5311	5361	5295	5000	4961	4761	4502
1930	4441	4480	4387	4562	4460	4316	4041	3817	3579	3480	3280	3193
1931	3195	3193	3187	3266	3167	2870	2682	2522	2396	2403	2356	2277
1932	2150	2174	2037	1948	1761	1619	1586	1522	1598	1741	1817	1846
1933	1853	1819	1664	1720	1948	2363	2928	3029	2803	2553	2443	2523

Source: (Mitchell & Burns 1946 p.25)

The accompanying figures offer visual representations for a practical understanding of this method's operation. Figure 4 depicts seasonally adjusted coke production figures in the United States monthly. In contrast, Figure 5 illustrates these numbers on a logarithmic scale graph, highlighting the turning points of both business cycles and specific cycles. The white areas in Figure 5 represent reference expansions, and the shaded areas represent reference contractions. Asterisks identify the peaks and troughs of specific cycles.

Figure 5 – Coke production in the United States (1914-1933)



Source: (Mitchell & Burns, 1946 p.25)

Utilizing the NBER methodology to identify and quantify economic cycles, Gayer, Rostow, and Schwartz meticulously identified fourteen business cycles from 1790 to 1850. Among these, seven cycles with peaks in 1792, 1800, 1810, 1818, 1825, 1836, and 1845 had already garnered recognition within the specialized economic community, with a consensus prevailing among experts (Morgan, 1953). In contrast, the remaining seven cycles, reaching their zenith in 1796, 1802, 1806, 1815, 1828, 1831, and 1839, were characterized as “minor cycles” by the authors. These minor cycles were relatively unfamiliar to the public upon the book’s publication (Morgan, 1953). However, they manifested more distinctly in export data and statistics related to prices and currency while leaving minimal traces in domestic investment data (Morgan, 1953). Nonetheless, these novel findings presented a groundbreaking contribution offered by the book.

Turning to the theoretical framework, the interpretation of British economic cycles endorsed by the authors supports an overinvestment theory of the cycles and a cost-push theory of inflation. Their analysis is grounded in the extensive examination of the long-term evolution of fixed investment and the secular growth of demand. Excess capacity is claimed to be behind at the onset of an upswing, aligning with Keynesian principles. According to their perspective, the business cycle arises from an accelerator-type mechanism. It commences with shifts in consumer goods demand, leading to even more substantial changes in producer goods production. The shift in demand, in turn, triggers shifts in supply conditions, resulting in cost fluctuations that influence price level movements, subsequently impacting income and beyond (Tavlas, 2013).

Expectations held by individuals played a pivotal role in explaining economic booms. Several boom periods were characterized as purely speculative phenomena or “manias” (Mathews, 1954, p. 106). These “manias” typically occurred during prosperous trade periods, and the collapse of speculative bubbles often catalyzed subsequent downturns. As for the overinvestment mechanism, excess capacity is utilized for production during the initial stages of an upswing following a downturn. Hence, there is a considerable delay before investment begins to rise. As demand gradually catches up with capacity, profits commence recovery, supported by increased exports (Capie & Wood, 1989, p. 84). Capacity expansion is typically undertaken on a large scale and involves extended maturation periods. As firms react similarly to the economic stimulus without considering each other’s actions, this results in surplus capacity, further impeding investment during subsequent recoveries (Capie & Wood, 1989, p. 84).

Hence, demand emerges as the primary driving force behind cyclical movements, while the role of money in causing inflation or deflation is somewhat downplayed in their analysis. Nevertheless, although briefly, monetary effects are acknowledged, with the observation that interest rates generally rise during economic booms (Capie & Wood, 1989).

Notwithstanding their groundbreaking and substantial efforts, Schwartz (2004) highlights that the book faced criticism in some of its initial reviews due to its outdated methodology when it was finally published. Most of the criticisms stemmed from the unfortunate circumstance that the book was released in 1953, several years after the research project’s completion in 1940. The critiques underscore the challenges posed by external factors,

such as funding constraints and wartime priorities, which not only affected the timeliness of the publication but also had repercussions on the scholarly reception of the work.

Initially, Columbia University's funding commitment was anticipated to cover the publication costs for five issues stemming from the project (Schwartz, 2001). However, once the project was completed, the allocated funding was reduced, covering only two volumes despite the authors producing five manuscripts (Schwartz, 2001). Consequently, the authors faced the challenge of condensing the extensive original content into these two volumes, resulting in certain research elements being excluded from public access (Schwartz, 2001).

The impact of World War II further exacerbated the delay in publishing the volumes as there was an ongoing paper rationing, and the prioritization of financial resources shifted away from the project (Goldin, 2020). Regrettably, when the volumes were finally released in 1953, they were met with criticism, primarily directed at the adopted methodology. The extended delay had rendered the content outdated, attracting unfavorable reviews from critics who scrutinized the relevance and applicability of the research in light of contemporary perspectives (Schwartz, 2001).

By 1953, the critique presented by Koopmans (1947)¹⁰, which characterized the NBER's method for measuring business cycles as "Measurement without a theory," had already served as a cautionary signal to economists regarding the limitations inherent in this analytical tool¹¹. Koopmans' assessment of the book underscored the distinctions between the rising approach championed by the Cowles Commission¹² and the established methodology employed by the National Bureau of Economic Research (NBER) for macroeconomic and business-cycle analysis back in 1947 (Hammond, 1996). As Schwartz (2004) points out, this critique was pivotal in the book's receipt of unfavorable reviews.

¹⁰ Koopmans (1947) regards the method as merely empiricism, not relying on any theoretical hypothesis to explain the nature of the economic processes that generate the cycle. As already mentioned, the NBER method was presented in the 1946 book "Measuring Business Cycles" by Arthur Burns and Wesley Mitchell, and Koopman's critique was presented in the review of the book that he wrote to an issue of the Review of Economics and Statistics.

¹¹ The original project had five volumes that had to be reduced to only two because the Columbia Council claimed there wasn't enough money to publish them all. Another factor that delayed the publication was the second world war that was underway and made it difficult for the author to find a publisher (SCHWARTZ, 2004 p.399).

¹² To sum up, the difference was that "The Cowles Commission objective was to wed neoclassical economic theory and modern probabilistically based econometrics. They were actually creating what came to be recognized as modern econometrics, their emphasis was on theory. The National Bureau objective (...) had much more to do with measurement." (HAMMOND, 1996 p. 5).

Nevertheless, Schwartz and Rostow¹³ deliberately chose to maintain the integrity of their analysis, as they found that the data and historical interpretation had remained broadly consistent (Capie & Wood, 1989, p. 81). While the 1940s had witnessed certain developments in economic theory, such as Keynes' exploration of short-term income fluctuations, they opted not to alter their work. Their rationale behind this decision stemmed from their belief that their research material could serve as a valuable foundation for other scholars to draw diverse conclusions (Capie & Wood, 1989, p. 81).

Another critique emerged due to a shift in perspectives within economic theory. Schwartz and Rostow had foreseen a transition from a focus on short-term growth to long-term growth starting in the 1950s, a prediction that indeed materialized. However, during the 1950s, the book faced criticism (Buckatzsch, 1955, p. 453) for its concentration on the business cycle while not providing elements that identified the mechanisms driving overall economic growth.

Despite the criticism concerning methodology and certain findings, the decision to persevere and publish a partially outdated work proved worthwhile. Economists generally perceived the book favorably, considering it a valuable contribution to the field (Capie & Wood, 1989, p.79). This recognition was attributed to the book's innovative nature and original collaboration, which outweighed its shortcomings. The sustained demand for the book led to its reprint in 1975. An essential point to note regarding the 1975 reprint is Schwartz's preface note, where she revisits the overinvestment interpretation and distances herself from the Keynesian analysis, stating that her interpretation of the facts had evolved in light of the results of "A Monetary History" (Capie & Wood, 1989).

Schwartz (2004, p. 400) asserted that Rostow, who primarily handled the analytical narrative, adhered to Keynesian principles and, unlike herself, did not alter his perspective regarding the secondary role of money in shaping economic outcomes¹⁴. To encapsulate the prevailing sentiment of the American Keynesian approach during that era, it could be succinctly put as "money did not matter" for Rostow. This viewpoint indeed held true in the diagnostic framework of the 1953 book.

¹³ Arthur D. Gayer passed away in 1951 before the release of the book (SCHWARTZ, 2004).

¹⁴ This divergence is discussed by Schwartz in the preface of the second edition in 1975 where she reviews some points related to: the role given to monetary policy, the interpretation of the behavior of interest rates, and the difference between relative price changes and changes in the general price level. Those points were reviewed in the light of the results found in her research with Friedman but this new point of view was not shared by Rostow who was not "converted" to monetarism sticking to the cost-push inflation analysis (Capie, Wood, 1989, p.82).

Another unfortunate event that accompanies the book's history is that once completed, the use of the manuscript of this project as her Ph.D. dissertation was denied by Arthur Burns, who was her thesis advisor¹⁵ at Columbia at the time (Schwartz, 2004, p.399). He claimed that the work should be independent to be accepted as a dissertation, and her manuscript was a collaboration with other authors (Schwartz, 2004, p.399). Despite the reasons Burns claimed to refuse to accept Schwartz's work, it was not uncommon for students to obtain their Ph.D. using a collaboration as their thesis. Friedman himself completed his Ph.D. at Columbia in 1946 using his joint work with Kuznets as his thesis (Schwartz, 2004).

Schwartz did not contest Burns' decision as she was concurrently collaborating with Friedman and was confident that she would get a dissertation from this new collaboration (Schwartz, 2004, p.399). Schwartz did attain her Ph.D. by employing "A Monetary History" as her thesis in 1964, just a year after the book's publication. The journey from entering Columbia to receiving her Ph.D. spanned 29 years for Schwartz, a testament to her perseverance and eventual success in overcoming the earlier setbacks in her academic pursuits.

It's worth noting that the style of this initial work can be seen as a precursor to her later influential book, "A Monetary History," as both share a similar profile—a historical and statistical study covering an extended period with reliance on historical narrative. Both projects demanded a significant amount of effort, particularly in terms of collecting and constructing new data and series.

The British studies project research culminating in the two volumes also yielded the article "British Share Prices, 1811-1850" (Gayer, Schwartz, Finkelstein, 1940), marking Schwartz's inaugural academic publication. At that juncture, the British study had already reached its completion. This paper possesses a notably descriptive character, underscoring the significance of documenting historical events to facilitate a more robust explanation of the behavior exhibited by cyclical movements in British share prices.

The authors meticulously present both individual and general indices of share prices within their research. They crafted eight distinct subgroups of indices, each representing different sectors of the economy¹⁶: canals, docks, waterworks, insurance companies, gas light

¹⁵ Bordo revealed that Burns was Schwartz's thesis advisor in an oral interview.

¹⁶ They warn that this is not a perfect representation of movements in general prices in Britain since: "To this day the role played by British industrial shares on the London Stock Exchange is relatively limited. Thus, the indices cannot reasonably be expected to reflect the conditions of all British industry in a strict sense. At best they

and coke companies, mines, railways, and banks. Two overarching general indices emerged from these subgroups: one that incorporated the performance of mines and another that excluded them. These indices serve as reflections of the broader trends in price movements.

The decision to bifurcate the general indices into two distinct categories stemmed from a critical necessity. At specific junctures, the shares associated with mining exhibited exceptionally wide fluctuations, at times moving inversely to the trajectory of all other shares. This unique behavior dominated the general index, often displaying “fake” peaks¹⁷. Consequently, the segregation of indices, with and without mines, became imperative to represent price movements accurately.

The evaluation of individual cycles hinges on meticulously examining their temporal dynamics, relying on a historical narrative to elucidate the events that precipitated the peaks and declines in share prices. A notable instance of this approach pertains to the pronounced surge in the prices of mining shares, followed by their abrupt descent. This phenomenon was ascribed to the novelty of the mining enterprise, which lacked a historical earnings track record to guide investors in assessing future profitability. Consequently, investors were susceptible to making judgments driven by overly optimistic expectations, far surpassing any reasonable estimations of potential gains. In contrast, banks and securities companies, having a more established presence in the market, offered investors a known track record of share profitability. Hence, the trends in their share prices exhibited comparatively lower volatility.

The authors underscore the significance of historical events, referencing them to elucidate the fluctuations observed in share prices throughout the cycles under scrutiny. Notably, the Napoleonic Wars are referenced, as they significantly impacted the early years of the examined period. For instance, the Battle of Waterloo marked the commencement of a substantial economic downturn, lasting from June 1815 to the middle of 1817. This battle dashed hopes of new market opportunities during a potential period of peace following the war, thereby frustrating investors’ expectations. Schwartz, Gayer, and Rostow incorporated this historical account into their 1953 book, emphasizing the role of investor expectations, the intricate scenarios confronting them, and their inherent inability to clearly foresee the future

summarize the changing fortunes of those selected companies that were quoted on the stock exchange.” (Gayer, Schwartz, Finkelstein, 1940, p.78)

¹⁷ No reference dates had yet been attributed to the cycles, therefore it was not possible to establish measures of timing (lags, leads and measures of conformity)

(Capie & Wood, 1989). This narrative serves as the closest semblance of a theoretical framework presented in the paper to explain the price movements.

The implicit model employed in their 1953 analysis to elucidate the mechanism underlying economic cycles mirrors that utilized by Mitchell in his writings¹⁸ (Capie & Wood, 1989). This model also finds its roots in the 1940 paper, as it was drawn from the book. This mechanism hinges on a sequence of events: Certain conditions manifest during a depression, laying the groundwork for a subsequent upswing. These conditions encompass various factors, including a reduction in costs, which in turn leads to increased profit margins, a greater willingness of banks to extend loans, and a need to replenish low inventories, among others. These factors converge to trigger a cumulative rise in income, heightened levels of investment, increased bank lending, and so forth. This positive momentum persists until it is eventually counteracted by a gradual accumulation of stresses, ultimately precipitating a downward cumulative process (Capie & Wood, 1989, p. 83). This model is elucidated in the paper to provide insight into the factors contributing to the peak of the cycle observed in 1825.

The year 1820 ushers in a prolonged period of revival, gradual at the beginning, but gathering momentum during 1823 and 1824. The post-Napoleonic-War deflation had run its course, heavy taxation had been reduced, capital was abundant,' and a strong need was felt for new outlets (Gayer, Schwartz, and Finkelstein (1940, p. 87).

It is crucial to bear in mind that during this era, the conventional procedure dictated a sequential approach: data gathering, followed by measurement, and then the application of theory to gain a deeper understanding of the insights generated by the initial two steps (Capie & Wood, 1989). Consequently, there are instances where historical aspects might appear to receive relatively superficial treatment.

The authors assert that the indices they constructed were designed to serve as tools for further historical and cyclical analysis. They acknowledge certain limitations that necessitate caution in interpreting the results, emphasizing that these findings should not be regarded as

¹⁸ Works like *Business Cycle* (Mitchell, 1913) and the book *Measuring Business Cycles* (Burns & Mitchell, 1946).

the definitive and conclusive word on the matter. They contend that the long-term variations observed in British share prices, inclusive of periods characterized by peaks driven by specific types of investments, can only be comprehended in the context of historical events (Gayer, Schwartz, & Finkelstein, 1940, p. 84). This underscores the enduring importance of historical context in their research, a theme that has consistently featured in their earlier work.

Shifting our focus to her solo contribution, “The Beginning of Competitive Banking in Philadelphia, 1782-1809,” (Schwartz, 1947), analyzes the proliferation of banks in Philadelphia during the late 18th and early 19th centuries and their profound impact on the banking sector. Schwartz uncovers the prevailing fears and sentiments of the time that contributed to the apprehension felt by incorporating newcomers. Schwartz (1947a) resorts to using archival material. She presents the content of letters exchanged by those involved in the paper to build the historical narrative.

Schwartz (1947a) demonstrates how bank founders back in the day were worried that multiple banks within the same community would engage in fierce competition, potentially jeopardizing the survival of the initial bank. Their concern was based on the belief that each new bank would deplete the specie reserves of established institutions while building up its own. They also argued that each new entrant would diminish the profits of existing banks (Schwartz, 1947, p. 417). Schwartz (1947, p. 427) traces the origin of the fear of bank competition to a dispute between the Jeffersonians, who advocated for more bank competition, and Hamiltonians, who defended the banking system's centralization and a more substantial state presence¹⁹.

However, the Philadelphia experience contradicted any fears. Despite opposition from established institutions, the city, home to the Bank of North America - the nation's first bank, demonstrated that competition did not hinder growth (Schwartz, 1947). One rival after another opened its doors, and its growth remained unaffected by competition (Schwartz, 1947). Moreover, the study suggests that the community might have benefited from introducing a second bank, even if it did not increase specie reserves or alter the total credit supply (Schwartz, 1947).

¹⁹ Jefferson and Hamilton had opposite views on the role of banks in the American economy (Dorfman, 1940, p. 117). Hamilton defended a robust central government and advocated for establishing a national bank tasked with economic regulation and maintaining a stable currency (Dorfman, 1940, p. 117). In contrast, Jefferson favored a more decentralized approach, promoting state-chartered banks with restricted authority to issue paper money and claimed that a larger presence of the state would hurt the principle of freedom (Dorfman, 1940, p. 117).

Banks gradually eased their resistance to state-chartered banks between 1784 and 1809. While the oldest bank initially opposed state-chartered rivals, it learned to adapt to the changing landscape marked by establishing the national bank in 1791 and, two years later, a bank in which the state held the largest stockholding (Schwartz, 1947). Eventually, the Bank of North America discovered that it could thrive despite, or perhaps because of, the presence of newcomers (Schwartz, 1947). Although opposition to chartering additional banks did not disappear entirely, the banking landscape underwent a significant transformation during this period (Schwartz, 1947).

In the same year, Anna Schwartz and Elma Oliver collaborated on the book “Currency Held by the Public, the Banks, and the Treasury, Monthly, December 1917-December 1944” published in 1947, currently an out-of-print volume from the National Bureau of Economic Research. The study has a technical character and consists of the elaboration of raw data to provide information about the figures of currency held by the public in the given period. They describe the methods of data collection used and how the statistics presented were elaborated. The method used to estimate the amount of currency available based on call date figures for all member banks in central reserve and reserve cities that were combined to obtain a close approximation of the weekly reporting member bank series on call dates, using Monday (until 1921) or Wednesday figures (from 1921 on).

This work is very relevant since it was the first effort made at the NBER to measure monetary variables, and it is also mentioned as providing the basis and the backbone for “A Monetary History of the United States” (Friedman & Schwartz, 1963, p.xxi).

One of the pivotal findings of this study underscores the substantial increase in the circulation of United States currency during the specified period. This surge can be attributed, in part, to the expansion of the banking system and the overall economic growth (Schwartz & Oliver, 1947). Furthermore, the research highlights that various factors played a role in influencing the circulation of currency, encompassing shifts in aggregate Treasury currency holdings, the utilization of Reserve Bank credit, and the dispersion of currency beyond the realms of the Treasury and the Federal Reserve Banks. Notably, the authors discern that changes in aggregate Treasury currency holdings do not directly influence member bank reserves. Nevertheless, an uptick in aggregate Treasury funds due to public payments typically corresponds with a decline in member bank reserves, and vice versa (Schwartz & Oliver, 1947, p. 29).

The Reserve Bank credit is a tool the Federal Reserve uses to influence the money supply and interest rates in the economy. Since 1918, Reserve Bank credit has been employed to counterbalance the impact of alterations in aggregate Treasury currency holdings and its deposits with Reserve Banks on the money market (Schwartz & Oliver, 1947, p. 29).

Concerning the currency outside the Treasury and the Federal Reserve Banks, this category assumes a significant role in the broader economy. Consequently, it profoundly affects the overall circulation of United States currency (Schwartz & Oliver, 1947, p. 30). Variations in the quantity of cash outside these entities can influence the broader money supply, affecting inflation and interest rates. To illustrate, suppose there is an augmentation in the volume of currency outside the Treasury and the Federal Reserve Banks. In such a scenario, it can expand the money supply, potentially culminating in inflation, especially if the economy is already operating at full capacity. Conversely, if the amount of currency outside these entities diminishes, it can reduce the money supply, triggering deflation and a contraction in overall economic activity.

Considering Anna Schwartz's works explored so far, it is clear that she had already accumulated significant knowledge of data collection and handling from the early days of her career, even contributing to the construction of primary datasets. Her role as a book reviewer further reinforces this conclusion. According to the Web of Science, Schwartz has provided literary reviews of economics books since 1947. Of the 38 works by Schwartz listed on the Web of Science platform, remarkably, 22 are book reviews. Initially, her analyses focused on books related to the North American banking system, indicating that this was a specialization in the early years of her career. Later on, she continued to assess books in economic history, emphasizing monetary economics, and expanded her coverage to include topics such as the Great Depression, the international financial system, and the gold standard, among others.

Although this first period of Anna Schwartz's intellectual life emerged into a Keynesian orthodoxy, a Keynesian analysis does not appear in her solo work, which consists of a historical narrative. As a result, it is challenging to categorize her definitively as a Keynesian economist or ascertain whether she simply had limited opportunities to challenge Keynesianism during that period, lacking the means to counter Rostow's Keynesian conclusions. Nevertheless, her keen interest in monetary economics and her prowess as a historian were already evident in her early writings. The subsequent section delves into her transition to monetarism, spurred by the compelling evidence in "A Monetary History."

1.3 The Friedman and Schwartz collaboration and the “conversion” to monetarism

Despite her early interest in monetary issues that started as an undergraduate student (Schwartz, 2004), Schwartz’s adherence to what the literature usually classifies as monetarism²⁰ happened during her research process with Friedman from the late 1940s to early 1960s. The claim that money did matter brought up in the book caused a revolution in economics, shifting the mainstream discourse from the Keynesian perspective towards what is nowadays known as monetarism. The book is one of the most relevant pieces of work in the 20th century (Bordo, Rockoff, 2013; Tavlas, 2013) and was one of the most important foundations, the first step of the then-new orthodoxy in economics (Snowdon & Vane, 2005 p.164)

This research was part of the NBER’s money and business cycles project. The money project was one of many started at the Bureau to expand on issues that Mitchell had initially surveyed in *Business Cycles* (1913); it had started before Friedman and Schwartz were part of it (Rockoff, 2006, p.3). Originally, James W. Angell, Anna’s master’s Professor at Columbia, and Caroline Whitney, another of Angell’s students at Columbia who completed her degree in 1935, were assigned to the project. Whitney was possibly experiencing health problems and was substituted by Schwartz (Rockoff, 2006, p.3). When Angell left the project, Arthur Burns, the Bureau’s director at that time, suggested that he should be replaced by Friedman, who had previously completed several projects at the Bureau (Rockoff, 2006 p.3).

When Anna Schwartz joined the NBER, she was assigned to work in the money sector, putting together a series on United States money. Arthur Burns suggested that Friedman join her in the project (Schwartz, 2004). Burns also suggested that Friedman should talk to Walter W. Stewart at Princeton about the project, and he was the one who recommended an “analytical narrative” as an upbringing for the statistical study (Rostow, 2006). Friedman and Schwartz started their well-succeeded research journey together in 1948. It was the first time he worked with money issues and began to develop monetarist views (Schwartz, 2004, p. 401)²¹.

"A Monetary History," the product of this collaborative effort, took shape across distances, primarily through correspondence between Friedman and Schwartz, with only occasional face-to-face meetings (Schwartz, 2004). While Friedman was based in Chicago, he engaged graduate students to participate in his workshop and write dissertations aligned with

²⁰ Even though she criticized the term in an interview given to Nelson (2004).

²¹ According to Schwartz (2004, p. 401) Friedman was regarded more as a statistician in his early career.

their research interests. Simultaneously, Schwartz orchestrated research activities in New York with the assistance of research associates from the Bureau (Schwartz, 2004). Despite the team being divided between New York and Chicago, this geographical distance did not hinder the research from progressing cohesively and effectively. Both researchers had their support teams but worked closely together to breathe life into the project, using manual calculators and sketching graphs with fine tracing pencils.

Schwartz fondly characterized this collaboration as "perfect." The division of labor involved conducting statistical work in New York, with the exchange of statistical charts, tables, and manuscript chapters occurring through mail correspondence. It was not uncommon for disagreements to arise, leading both authors to suggest revisions to each other's work (Schwartz, 1993). However, these differences in perspective never strained their professional relationship (Schwartz, 1993).

Their respective roles in the partnership were clearly defined. Friedman was the primary investigator responsible for assessing data availability and the feasibility of data construction. He held the authority to approve the data sets to be utilized (Lothian & Tavlas, 2018). Conversely, Anna Schwartz's main role involved investigating data availability and constructing datasets when necessary (Lothian & Tavlas, 2018). Their correspondence often involved Schwartz seeking clarification from Friedman regarding specific data requirements or the reasons behind data disapprovals, allowing her to gain insights into his motivations and thought process (Lothian & Tavlas, 2018).

However, it is important to note that Schwartz had a good domain of the theory behind the Monetary theory. Behind the scenes, she would suggest that the assistants read "A Program for Monetary Stability" by Friedman (1959) to understand what they wanted in the project. She was constantly teaching the assistants about it and clearing their doubts²². Intellectually, Schwartz and Friedman made equal contributions to the book, engaging in a genuine collaboration where each author carried out half of the work²³. While Schwartz did not primarily handle the theoretical aspects, she possessed a solid grasp of the underlying theory and was more than capable of identifying any discrepancies or areas that required revision or

²² This information was provided by David Laidler in an Interview by email.

²³ This information was provided by Bordo in an interview, but it is also clear from the content of their correspondence.

improvement in their work. This dynamic is evident in their correspondence, where Schwartz's critical insights and suggestions played a pivotal role in shaping the book's content.

Anna Schwartz, known for her meticulous approach and professionalism, had a distinct characteristic of maintaining a professional distance in her leadership. However, this demeanor did not prevent her from being extremely clear in explaining her viewpoints and the reasons behind her specific data requests. She had a remarkable ability to connect the dots between the collected data and the historical context under analysis, making the significance of the numbers even more apparent.

Despite the social distance often perceived in professional environments, Anna Schwartz displayed empathy and compassion. Whenever possible, she offered support in personal matters, showing that, in addition to being a dedicated researcher, she was also a human being willing to assist her colleagues in their lives outside of work. Meticulousness was a hallmark of Anna Schwartz's work. She insisted that everything be verified and reevaluated, especially regarding numbers, graphs, and tables.

The letters exchanged among the authors between May 1956 and December 1969 reveal an equal collaboration and deep mutual trust between them. Although Friedman was primarily responsible for the theoretical content of the work, he would reach out to Schwartz to support his views. On August 2, 1956, he acknowledged that the suggestions Schwartz made were necessary and said:

We surely should have the wholesale price index brought up to date and have averages as with the others. The long period annual net product series certainly should be analyzed. I suppose by both forms you mean both money and real (Friedman, 1956)

In the same letter, he asks for her help to finish the chapter:

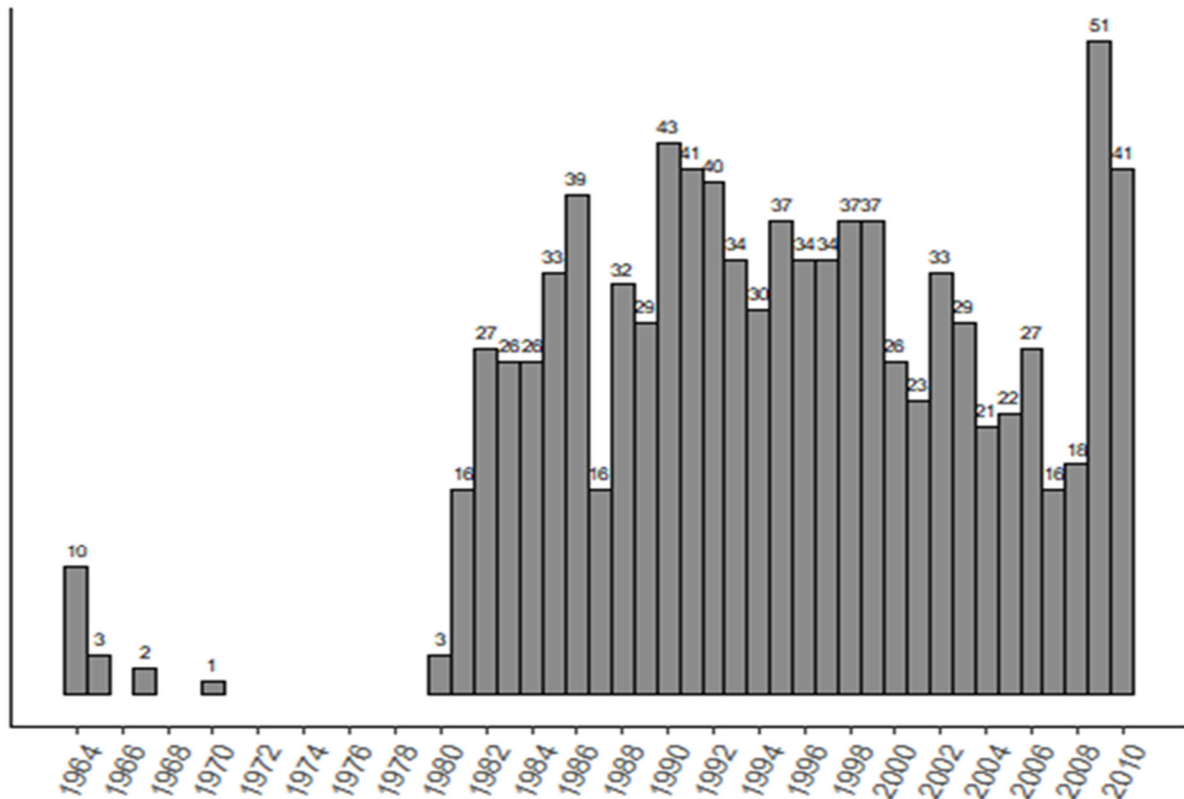
To turn to new business. I enclose herewith a rough draft of the secular chapter. Will you have it typed in draft form with two carbons (one for you one for reserve) at the Bureau? I suspect that will be faster than my sending it to Chicago and it has the

additional advantage that you can look it over in its present form and understand what I am now going on to. For, unfortunately, I have left much in the chapter for you to do. This is only partly my laziness; it is even more that I don't have the final figures we want to use so I have constructed approximations that underly my conclusions but need to be replaced by the final figures (Friedman, 1956).

Schwartz and Friedman's collaborative efforts spanned more than three decades. They culminated in the publication of three books: "A Monetary History of the United States, 1867-1960" (Friedman & Schwartz, 1963), "Monetary Statistics of the United States" (Friedman & Schwartz, 1970), and "Monetary Trends in the United States and the United Kingdom, 1875-1975" (Friedman & Schwartz, 1982), alongside several journal articles (Bordo, 1989). While their joint research produced three books, primarily "A Monetary History" has achieved classic status. The reasons behind the relative obscurity of the other works will be explored shortly.

Figure 6 illustrates a graph depicting citations to "A Monetary History" from 1964 to 2019, with the number of citations on the vertical axis. Although the data for most of the 1960s and the 1970s is incomplete, three distinct phases can be discerned: i) a trend of increasing citations until 1990, with only a minor dip in 1987, ii) a general decline in citations during the 1990s and 2000s, iii) a significant resurgence in 2009, followed by another period of increasing citations, surpassing the initial trend. The decline from the 1990s to the late 2000s might be associated with the resurgence of Keynesianism in mainstream economics. The substantial increase after 2008 may be linked to the global crisis that struck that year, as the book is renowned for its analysis of the 1929 crisis, reigniting interest in such historical economic issues.

Figure 6 – A Monetary History of the United States: citations.



Source: Google Scholar.

Michael Bordo (1989) conducted a similar analysis for the period from 1964 to 1986 and concluded that the number of citations had been steadily increasing, albeit with irregularities, since 1965. His findings can be verified in the appendix, but a similar trend can be observed in Figure 3 when considering the overall trajectory. Bordo (1989, p.16) posits that this is a hallmark of a classic because, in most cases, the rate of citations for articles and books in science typically peaks within three years and then gradually declines. Bordo (1989) also highlights that the book was more frequently cited in economics journals immediately after its release, as it significantly impacted the foundations of macroeconomics at that time. However, this pattern gradually evolved; by the 1980s, it had shifted. The book began to receive more frequent citations in journals related to history. However, when examining the data from the

Web of Science, a different pattern emerges: the book continues to be more frequently cited in economics journals. This difference can be attributed to variations in classification methods.²⁴

The methodology selected for isolating economic cycles in "A Monetary History" adhered to the NBER (National Bureau of Economic Research) approach. Having worked with it during the British project period, Anna Schwartz was already well-versed in this methodology. Milton Friedman, too, was acquainted with it, and Schwartz (2004) notes his involvement in the method's conceptualization. He is also listed as NBER staff in "Measuring the Business Cycle" (Mitchell & Burns, 1946), a book that establishes this method.

The collaborative work began to take shape as data series were gradually compiled. By the late 1950s, they had a preliminary draft. During this period, Friedman had already presented his restatement of the quantity theory of money in 1956 (Friedman, 1956), which contributed significantly to the theoretical underpinnings of his joint book with Anna Schwartz (Schwartz, 2004). Following scrutiny by reading committees directorial boards, addressing inquiries, and making necessary revisions, the book was eventually published in 1963. Anna Schwartz successfully employed it as her doctoral thesis, earning her Ph.D. from Columbia University in 1965.²⁵

The book extensively analyzes the American economy spanning 93 years, organized into thirteen chapters replete with graphs and historical context. Within these chapters, the authors identify numerous cycles encompassing the book's examined period and conduct in-depth assessments of each era. From their analysis, they draw overarching conclusions regarding the shared characteristics of these cycles (Friedman & Schwartz, 1963, p. 676):

- i) Changes in the behavior of the money stock are closely related to changes in economic activity, prices, and money income;
- ii) They observed a highly stable mutual relationship between monetary and economic change;

²⁴ Bordo uses the classification of the journals for his analysis, as the Web of Science method seems to classify papers in categories instead of journals, making room for double counting.

²⁵ She reports it was not an easy job to use the book as her thesis, and that it was difficult to convince Arthur Burns to allow her to do so. He thought she should do a different work to use as a thesis (SCHWARTZ, 2004).

- iii) defending the exogeneity of money, it is observed that monetary changes often have an independent origin and are not a response to changes in economic activity
- iv) Monetary relationships can be deceiving, the relevant movements being often the opposite of what they seem to be at first sight.

The theoretical foundation of this project rests upon the modern quantity theory of money, as advanced by Friedman in 1956. In essence, this modern quantity theory hinges on the interplay between a stable demand for money and a money supply determined independently. It postulates that any alteration in the rate of money growth will subsequently induce a corresponding change in the rate of nominal income growth, albeit with a lag. The data compiled and analyzed in this book support the assertion that the quantity theory, as revitalized by Friedman, is indeed valid.

Tavlas (2013) highlights several significant findings from Friedman and Schwartz's book. Firstly, it identifies a robust empirical relationship between changes in the money supply and subsequent price changes. While this relationship does not provide a clear direction of influence, the substantial amount of observed data suggests that variations in the money supply are a necessary and sufficient condition for substantial price fluctuations. Secondly, the book underscores no straightforward correlation between price changes and output growth fluctuations over the observed period. Thirdly, it emphasizes that the connection between money, output, and prices is considerably more intricate when viewed over economic cycles compared to the long-term perspective. Lastly, Tavlas (2013) points out that the Federal Reserve's monetary policy actions triggered and exacerbated the Great Depression. The Fed's decision to pursue a tight monetary policy starting in early 1928 contributed to the onset of the Depression, and its failure to provide sufficient liquidity during a series of bank failures further deepened the economic downturn.

Friedman and Schwartz (1963, pp. 677-678) identified four periods of economic stability marked by a high degree of consistency in the annual changes in the money supply: 1882-1892, 1903-1913, 1923-1929, and 1948-1960. In contrast, they identified six periods of significant economic contractions characterized by a substantial decline in the money supply, resulting in distress and unemployment. These contractions occurred during 1920-1921 and

1937-1938, with the decrease in the money supply attributed to Federal Reserve policies. Additionally, contractions transpired during 1873-1879, 1893-1894, 1907-1908, and 1929-1933, largely due to major banking crises or monetary disturbances. The consistent emphasis in the book is that monetary factors play a pivotal role in driving economic cycles.

Despite the book's substantial influence on the centrality of monetary policy's impact on real economic variables, this emphasis was not entirely novel in economic literature. Clark Warburton, a prominent figure, significantly influenced the discussions within the book. Warburton's ideas played a crucial role in shaping the monetarist perspectives of both Anna Schwartz and Milton Friedman (Lothian & Tavlas, 2018). The book's preface acknowledges the profound influence of Warburton on the development of its core ideas.

We have accumulated numerous and heavy debts during the many years that this book has been in the making. An earlier draft of the manuscript was duplicated some years ago and circulated among a number of scholars from whose comments and suggestions we have profited greatly. We owe a specially heavy debt to Clark Warburton. His detailed and valuable comments on several drafts have importantly affected the final version. In addition, time and again, as we came to some conclusion that seemed to us novel and original, we found he had been there before (Friedman & Schwartz, 1963 preface xxii)

Warburton's role in anticipating a considerable part of the monetarist foundations in the 1940s and 1950s has already been discussed in the history of economics literature, to cite a few works that address the issue, Humphrey (1971), Patinkin (1973), Bordo and Schwartz (1979, 1983), Lothian and Tavlas (2018) and Tavlas (2019).

Anna Schwartz herself co-authored a work that delved into the life's work and ideas of Clark Warburton, underscoring her appreciation and recognition of his contributions. In "Clark Warburton: Pioneer Monetarist," Schwartz and Bordo (1979) portrayed Warburton as a seminal figure who championed that fluctuations in the quantity of money served as the primary, independent driving force behind economic cycles. According to them, as early as the late 1940s, Warburton stood as a solitary voice challenging prevailing Keynesian perspectives that

disregarded the role of monetary policy in influencing economic variables (Bordo & Schwartz, 1979).

While Warburton anticipated many key elements of the monetarist revolution that unfolded in the 1960s and 1970s, including the necessity of a monetary growth rule to achieve price stability, it is impossible to establish a direct causal link between Warburton's views and Milton Friedman's. Nevertheless, their connection appears to be more intertwined than initially recognized (Tavlas, 2019).

Bordo and Schwartz (1983) underscore a distinction between Warburton's approach and the one put forth by Friedman and Schwartz (1963). They note that Friedman and Schwartz relied on statistical methods alongside qualitative historical data, particularly the first differences in the logarithms of money series. In contrast, Warburton expressed his data as deviations from trends exclusively. After calculating the first differences, Friedman and Schwartz identified turning points in the series from 1867 to 1960 using the NBER cycle chronology technique. They then compared the peaks and troughs in the percentage rate of change of the money supply with those in general business conditions (Bordo & Schwartz, 1983, p. 258).

Rockoff (2006) posits that the primary influence behind "A Monetary History" is the work of Wesley Mitchell, particularly his seminal book "Business Cycles" (Mitchell, 1913). However, historians of economic thought have somewhat overlooked this influence. Rockoff (1989) even regards himself as one of Anna Schwartz's unofficial students after collaborating with her at the NBER. Anna Schwartz acknowledged Mitchell's influence in his 2006 paper, reinforcing this interpretation. Rockoff (2006) contends that Mitchell and the NBER provided the foundational methodology, emphasizing the importance of long and accurate time series of monthly data. In addition to shaping the methodology, Mitchell (2013) had already arrived at a similar conclusion regarding the role of money in business cycles, asserting that money played an independent, predictable, and significant role in shaping economic fluctuations—a conclusion akin to that reached by Friedman and Schwartz (1963) regarding the exogeneity and stable demand for money (Rockoff, 2006).

While Friedman and Schwartz's work did differ on several aspects, particularly concerning the role of bank-lending policies in transmitting monetary impulses, "A Monetary History" profoundly reinforced Mitchell's fundamental conclusions, particularly with regard to

the role of money in business cycles, albeit through more comprehensive historical analysis (Rockoff, 2006)²⁶. To sum up, "A Monetary History" expanded on Mitchell's early views.

Capie and Wood (1989) emphasize that during the 1920s, a monetary theory of the business cycle had already gained prominence. Authors like Hawtrey regarded the business cycle as "a purely monetary phenomenon." Mitchell's work in 1927 included a comprehensive survey of problems and materials, shedding light on the primary lines of explanation for economic cycles, which notably encompassed an extensive discussion of monetary factors at that time (Capie & Wood, 1989).

While it is true that the role of money in business cycles was not a novel concept by the 1960s, it doesn't diminish the original contributions made by "A Monetary History of the United States, 1867-1960." Arguably, one of its most renowned and enduring legacies is its interpretation of empirical evidence supporting the idea that the Federal Reserve exacerbated the Great Depression. As pointed out by Cristina and David Romer (2012), for many, the book implicitly conveys the notion that the Great Depression of 1929 was exacerbated by monetary contraction and errors committed by the Federal Reserve. However, the implied causality from monetary changes to their impact on prices and economic cycles faced criticism.

Schwartz (2004) contends that the NBER was not particularly sympathetic to the notion that money was the primary driver of economic cycles. Notably, figures like Arthur Burns and Geoffrey Moore were skeptical about attributing the rate of change in money as the sole cause of business cycles. Additionally, James Tobin (1970) raised a classical post hoc ergo propter hoc critique, suggesting that causal inferences cannot be drawn directly from the data, implying that the correlations proposed in the book might be spurious.

Hammond (1996, p. 2) highlights that the criticisms directed at "A Monetary History" revolve primarily around these points:

- i) The conclusion: the idea of causality from movements in the rate of change of money affecting prices and economic activity was a frequent source of criticism since it defied Keynesian views.

²⁶ Daniel Hammond (1996) also debates Mitchell's influence on a Monetary History.

- ii) Methodology: the NBER methodology had already undergone Koopman's (1947) Measurement without a theory critique for a while in 1963 and was not so popular among economists anymore.
- iii) Partial equilibria: The fact that Friedman used the Marshallian partial equilibria method of analysis was another point that defied Keynesian views and raised criticism since the IS-LM model typically used back then was one of general equilibrium character (Hammond, 1996, p.2).

Despite the criticisms leveled against it, the idea that changes in the money supply could impact economic activity gained traction within the economics profession. This notion gradually permeated economic literature in the subsequent years, giving rise to a new school of thought known as monetarism. This shift in perspective, in which money began to be recognized as a significant factor in economic dynamics, posed a challenge to the prevailing Keynesian approach (Hammond, 1996). "Money does matter" became a mainstream position, with "A Monetary History" playing a pivotal role in shaping this perspective.

Bordo (1989) acknowledges that one of the lasting contributions of "A Monetary History" to economic history, aside from its provocative reinterpretation of U.S. monetary history, is that it sparked a flourishing industry of scholarly papers on the subject. The analytical framework of the modern quantity theory presented in the book underwent modifications to incorporate new theoretical and empirical techniques, becoming a widely employed method for analyzing the economic experiences of numerous countries across extensive historical periods (Bordo, 1989).

The research conducted for "A Monetary History" led to the publication of two more books. "Monetary Statistics of the United States" followed in 1970, and "Monetary Trends in the United States and the United Kingdom. Their Relation to Income, Prices, and Interest Rates, 1867–1975" (Friedman & Schwartz, 1982) marked the series' conclusion. In 1966, the authors expanded their dataset to include the United Kingdom, necessitating a significant rewrite of the existing draft.

Friedman and Schwartz had big hopes for "Monetary Statistics". They thought this book would be one of the most important macroeconomics books of the century. However, the

reception of their other two books fell short of their hopes. First, the extended period it took to complete the work, a total of sixteen years, diminished its freshness, and it never achieved the same level of acclaim as "A Monetary History" (Schwartz, 2004). Secondly, the methodology employed for assessing the statistics and economic cycles was considerably outdated, which played a role in the book's lukewarm reception among economists. Friedman and Schwartz were profoundly disheartened by the underwhelming performance of their subsequent work, and this disillusionment partly influenced Friedman's decision to pause his academic production²⁷.

Despite the disappointing reception, Anna Schwartz continued her research and published on monetary issues and economics history until the end of her life. Notably, she embarked on another long-term collaborative project with Michael Bordo and Owen Humpage, resulting in the book "Strained Relations: US Foreign-Exchange Operations and Monetary Policy in the Twentieth Century (Bordo, Schwartz, Humpage, 2015)." This research initiative began in 1999 but faced a significant delay in publication, ultimately seeing the light of day in 2015, three years after her passing.

The protracted timeline was mainly attributed to their need for data from the Federal Reserve, which initially refused to release it, claiming they did not possess the required information. To address this challenge, Schwartz sought the intervention of Allan Greenspan, then-President of the Federal Reserve, convinced that the institution held the necessary data. With Friedman's involvement, they successfully obtained the data they needed, reinvigorating the research effort.

Despite the challenges posed by aging, Schwartz persisted and even authored the chapter on the interwar period and stabilization. Anna Schwartz's unwavering commitment and determination were truly remarkable.

Anna Schwartz's complete conversion to monetarism following "A Monetary History" was a turning point in her academic career. She maintained throughout her subsequent scholarly journey that money played a crucial role in economic dynamics, even as monetarism eventually gave way to the new Keynesian era. This enduring commitment to the importance of money in economics is evident in her post-1963 works.

²⁷ The information in this paragraph was provided by Michael Bordo in personal communication.

1.4 Anna Schwartz Beyond “A Monetary History”

This section explores Anna Schwartz’s contributions beyond her seminal work in “A Monetary History.” While this book undoubtedly stands as a cornerstone of her career and an influential piece in the field of economics, its towering significance often overshadows the debate about her other works. Therefore, this section aims to unveil a less-recognized aspect of her scholarly endeavors and contextualize it within a broader intellectual discourse. By doing so, this chapter seeks to broaden our understanding of Schwartz’s diverse body of work and shed light on her lesser-known contributions to the field. Most of the papers discussed here are part of the NBER book, which is a reunion of her papers “Money in Historical Perspective.”

Anna Schwartz's work can be broadly categorized into three dominant themes: economic history, monetary economics, and economic statistics (Bordo, 1989). From the outset, her early contributions already showcased her prowess in economic history and statistics. Notably, her involvement in the British study was centered around the statistical aspects, and her work, "The Beginning of Competitive Banking in Philadelphia," stands as a testament to her mastery of economic history (Bordo, 1989).

In the realm of monetary economics, Anna's writings encompass a wide range of topics, including money, income, prices, monetary policy, and international issues (Bordo, 1989). However, it is noteworthy that this particular strand of her work gained prominence and became more frequent following her collaboration with Milton Friedman.

The analysis begins with a discussion of Schwartz’s insights into the historical evolution of monetary systems and their implications. Her research and analysis comprehensively examine the gold standard and Bretton Woods. She highlights strengths, weaknesses, and what led to their downfall, leading to the current fiduciary era.

1.4.1 The Gold Standard Debate

In the paper "Alternative Monetary Regimes: The Gold Standard" by Anna Schwartz (1987a) was included as Chapter 15 in the book "Money in Historical Perspective," which was a tribute to Schwartz by the National Bureau of Economic Research (NBER). This chapter comprehensively examines the historical evolution of the gold standard as a monetary regime, its strengths and weaknesses, and its potential as an alternative to fiat money.

The research for this chapter was spurred by the adverse economic conditions that emerged after the introduction of fiduciary money. This new regime was believed responsible for high and variable inflation and interest rates, low productivity growth, and turbulence in foreign exchange markets since 1970 (Schwartz, 1987a, p. 372). These events reignited the debate about the desirability of returning to the gold standard, leading to the formation of the Gold Commission in 1981, with Anna Schwartz serving as its president, to explore the possibility of reinstating the Gold Standard (Schwartz, 2004).

President Ronald Reagan's advisors were among the defenders of a return to the System. They claimed that “one of the most urgent tasks in the period ahead will be the restoration of a dependable monetary standard -- that is, an end to inflation” (Morgan, 1980). According to the Gold Commission report (1982, p.1), the committee was “appointed by Secretary of the Treasury Donald T. Regan on June 22, 1981, pursuant to conduct a study to assess and make recommendations concerning the policy of the U.S. Government concerning the role of gold in domestic and international monetary systems.” The Gold Commission included a wide spectrum of views on the potential roles of gold, including proponents who favored a restoration of the regiment and also participants who were against it. Therefore, they encountered some meetings to debate the pros and cons of the Gold Standard. Hence, Anna Schwartz, a well-known specialist in the history of the Gold Standard, was essential to enrich the debate.

Back to the paper, Schwartz (1987a, p.372) explains that the historical gold standard evolved over centuries, but its classic form took shape in the 19th century (Schwartz, 1987a, p. 372). It operated as a monetary regime where a specific weight of gold served as the ultimate form of money, and all other forms of money, such as government fiduciary issues, bank notes, and deposits, were interconvertible with this gold standard (Schwartz, 1987a, p. 372). The gold standard can be described as a rule governing monetary policy, where the domestic money supply adjusts to changes in gold reserves. This adherence to the gold standard rule is seen as a form of precommitment by monetary authorities (Schwartz, 1987a, p. 372). Economists differ in their assessment of the gold standard, with some emphasizing the advantages of precommitment. In contrast, others prefer alternative rules like stable monetary growth (Campbell & Dougan, 1986, as cited in Schwartz, 1987a, p. 372).

Schwartz (1987a) explores the strengths and weaknesses of the gold standard as a monetary regime, comparing the arguments of those who defended and criticized the system. Supporters of the gold standard present several fundamental arguments in its favor, regardless

of the specific variant. Their primary argument is that gold possesses intrinsic value, making it an ideal standard against which to measure the value of all other commodities. Additionally, advocates consider gold a reliable store of value because new gold production only marginally increases the existing stock (Schwartz, 1987a, p.371). Consequently, prices quoted in terms of gold exhibit minimal yearly fluctuations. Even in the presence of alternative forms of currency, such as government-issued paper money and bank deposits, the commitment to fixed-price convertibility into gold would compel monetary authorities to refrain from implementing inflationary policies (Schwartz, 1987a, p.371).

Another argument in support of the gold standard asserts that the rate of growth in the gold money supply would automatically adjust according to the profitability of gold production. This mechanism would ensure a stable money supply and price levels over the long term (Schwartz, 1987a, p.371)

Remarkably, price stability was one of the system's main advantages, according to the proponents of the return to the gold standard. It offered long-term price predictability because market participants could confidently enter into long-term contracts based on the expectation that the price level would ultimately revert to its initial level. However, price movements exhibited short-term variability and trends before and during World War I. However, Schwartz (1987a, p.389) defends that fluctuations in output growth may have been linked more to the instability in money growth, influenced by the peculiarities of the U.S. banking system, rather than inherent flaws in the gold standard (Schwartz, 1987a, p. 388).

Concerning its weaknesses, opponents of the gold standard argue that it left countries vulnerable to external shocks, such as fluctuations in the supply and demand for gold (Schwartz, 1987a, p. 378). Trade deficit countries faced gold outflows, resulting in money supply contractions and deflationary pressures, reducing output and unemployment. Trade surplus countries experienced gold inflows, causing money supply expansions, inflationary pressures, increased output, employment, loss of competitiveness, and declining exports.

Additional shortcomings concern the inelastic nature of the gold supply, meaning that it cannot be expanded rapidly enough to meet the growing demands of the economy (Schwartz, 1987a, p. 390). This inherent limitation can result in deflationary pressures and economic instability. Furthermore, the gold standard is susceptible to speculative attacks, as investors may seek to hoard gold in anticipation of its value appreciating (Schwartz, 1987a, p. 390). This

outcome can trigger a contraction in the money supply and set off a deflationary spiral, exacerbating economic challenges. Lastly, implementing the gold standard in practice poses substantial difficulties. Maintaining a fixed exchange rate system under this standard requires high international cooperation and coordination, making it operationally complex and potentially prone to disruptions (Schwartz, 1987a, p. 390).

Schwartz (1987a, p. 377) further states that the gold standard was blamed for contributing to the instability of the global economic system after 1929. The fixed exchange rates under the gold standard transmitted monetary and non-monetary disturbances across countries, leading to synchronized business cycles. Schwartz notes that countries that abandoned the gold standard earlier and devalued their currencies recovered more quickly from the Great Depression than those that remained on the gold standard.

The gold standard played a significant role in the Great Depression, with Schwartz's position, as outlined in "A Monetary History," asserting that it was not the primary cause but did exacerbate the severity and duration of the economic downturn. The gold standard constrained central banks' ability to respond to the crisis by limiting their capacity to expand the money supply and lower interest rates, resulting in a deflationary spiral (Schwartz, 1987a, pp. 378-379).

In conclusion, Schwartz's chapter discusses the potential for a return to the gold standard as an alternative to fiat money, particularly in light of the inflationary pressures of the 1970s. She concludes that while the gold standard has advantages over fiat money, it is not a viable solution and would require careful implementation and management to be successful. Additionally, it highlights that most of the Gold Commission committee, including Schwartz herself, determined that returning to the Gold Standard was undesirable (Schwartz, 2004, p. 408).

Schwartz expands on the global financial system debate in "Lessons of the Gold Standard Era and the Bretton Woods System for the Prospects of an International Monetary System Constitution" (Schwartz, 1987b). This paper examines the historical evolution of the international monetary system, specifically focusing on the pre-World War I gold standard and the Bretton Woods system. The paper evaluates the rise and posterior failure of the two systems to address contemporary problems in the global coordination of the financial system. This work is also, in a way, part of the debate about the viability of the fiduciary system vs. a commodity-based one.

Schwartz observes that the gold standard emerged gradually as an organic system approximately three decades before World War I without coordinated global enforcement (Schwartz, 1987b, p.391). Instead, individual countries adopted the gold standard as they perceived it to align with their national interests.

According to Schwartz (1987b, p.392), one of the primary advantages for countries embracing the gold standard at the turn of the nineteenth century was enhanced access to international capital markets, mainly centered in financial hubs like London, Paris, or Berlin. This access was particularly beneficial for developing countries, most of which were in stages of economic maturation. At the time, the primary drawback, as perceived, was the need to amass a gold reserve. Except for Germany, which acquired gold as part of the war indemnity from France in 1870-71, other countries had to borrow domestically and abroad to accumulate the necessary funds to purchase gold (Schwartz, 1987b, p. 393). Nevertheless, the status as a debtor nation, achieved by embracing the gold standard, far outweighed the interest expenses associated with such borrowing (Schwartz, 1987b, p. 393).

In the era of the gold standard, governments didn't need to coordinate their economic policies to pursue their national interests explicitly. Instead, coordination was achieved through maintaining fixed exchange rates and convertibility between national currencies (Schwartz, 1987b, p. 393). According to Schwartz (1987b, p.393), the system ensured that national price levels remained in sync, allowing for the relatively free movement of people, goods, capital, and money across borders. International monetary arrangements were shaped by the independent choices of countries and were a result of market clearing.

In contrast, the Bretton Woods system was not an organic one. It was a deliberate creation emerging from the Bretton Woods Conference in 1944. It was designed to counteract protectionist trade policies, currency depreciation, and exchange controls that had plagued the pre-World War II era (Schwartz, 1987b, p.393). The primary objectives of this system, established by conference delegates, were eliminating trade and payment restrictions under a framework of fixed exchange rates (Schwartz, 1987b, p.393). Adjustments to these rates were limited to situations characterized by "fundamental disequilibrium" in the balance of payments. The International Monetary Fund (IMF) would provide lending facilities to bolster the IMF member nations' gold and foreign exchange reserves, offering liquidity to address temporary balance of payments deficits. The United States was designated as the reserve currency country

in this system, with other nations pegging their currencies to the U.S. dollar (Schwartz, 1987b, p.393).

The Bretton Woods system encountered significant challenges during the 1960s. These challenges encompassed persistent U.S. balance of payments deficits, inflationary pressures stemming from the Vietnam War, and the reluctance of the United States to make necessary adjustments to its domestic policies to alleviate these deficits. These formidable obstacles ultimately culminated in the demise of the Bretton Woods system in 1971 when the United States suspended the convertibility of dollars into gold. Consequently, it can be contended that the failure of the Bretton Woods system can be attributed to its incapacity to effectively address and surmount these pressing challenges (Schwartz, 1987b p.394).

Schwartz (1987b) reviews the possibilities for international macro policy coordination and cooperation and discusses the benefits and challenges of coordinating monetary policy among industrialized democracies. Concerning the potential advantages and obstacles associated with coordinating monetary policy among industrialized democracies, Schwartz posits that the prevailing viewpoint in the literature suggests that collaboration among representatives of these democracies can lead to adjustments in monetary growth rates, interest rates, exchange rates, and fiscal budgets. These adjustments are aimed at enhancing the macroeconomic performance of all nations involved compared to what it would be without such coordination (Schwartz, 1987b, p.495).

Nonetheless, formidable challenges to achieving this level of coordination exist. These challenges encompass disparities in inflation rates, real growth rates, and unemployment rates among the industrialized democracies. These disparities imply that effective coordination would be more feasible if each country initially focused on reducing these divergences. Furthermore, an additional complication arises from the self-interest of policymakers, who are inclined to maintain control over the selection of domestic objectives and the policies devised to attain them (Schwartz, 1987b, p.495). Schwartz (1987b, p.496) mentions the importance of a monetary constitution to coordinate countries in a financial system. She affirms that political unification would have to be well advanced for governments and their policymakers to yield monetary sovereignty to gold, a coalition of countries, a world central bank, or private money producers. That would require persuasion for all countries involved to accept a monetary constitution. If the persuasion fails as it did in the Bretton Woods episode, it would be illusory to implement a monetary constitution.

Despite portraying the advantages of the Gold Standard without discussing its downfall, Schwartz (1987b) does not seem enthusiastic about its return. Once again, the impression left to the reader is that the effort necessary to coordinate countries to return to a commodity-based currency seems almost unfeasible.

The paper "The postwar institutional evolution of the international monetary system," as discussed by Schwartz (1983), continues the themes explored in her previous studies. Schwartz explores the transformation of the global monetary system from the 1930s through the post-World War II period. The paper underscores the inherent shortcomings of the international financial system prevalent in the 1930s, marked by protectionist trade policies, the imposition of exchange controls, and the practice of competitive currency depreciations. These deficiencies had grave consequences, including triggering the Great Depression and the eventual disintegration of the gold standard.

Schwartz (1983, p.14) addresses the international monetary system of the 1930s by highlighting its shortcomings. The latter encompasses protectionist trade policies, the imposition of exchange controls, and the practice of competitive currency devaluations. This environment spurred countries to engage in competitive devaluations, a race to gain advantages in international trade, resulting in a contraction of global trade and a downturn in economic activity. The system lacked coordination and cooperation among nations, with no mechanisms in place to address or mitigate international payment imbalances. In summary, the global monetary system of the 1930s was marked by instability, uncertainty, and a notable absence of trust among nations (Schwartz, 1983, p.14).

In response to these challenges, the Bretton Woods Conference of 1944 sought to rectify these issues by establishing a system of fixed exchange rates, with the US dollar assuming a central role as the primary currency. Under this system, other nations would peg their currencies to the dollar within defined margins, while the US committed to converting dollars into gold or vice versa at a fixed rate of \$35 per ounce. The fundamental objective was the elimination of trade and payment restrictions and promoting stability within the international monetary system (Schwartz, 1983, p.21).

Nevertheless, Schwartz (1983, p.21) points out the challenges faced by this system. She elucidates that its successful operation hinged on foreign central banks intervening with their currencies to maintain par values against the dollar. At the same time, the US remained prepared

to buy or sell gold at the established rate of \$35 per ounce in transactions with foreign monetary authorities. Many countries desired surpluses to augment their dollar reserves, and this system tended to result in a progressively weakening US balance of payments and mounting doubts concerning the sustainability of the US commitment to gold convertibility. Over time, the system underwent multiple revisions and crises, including the dissolution of the gold pool in the 1960s and the devaluation of the dollar in 1971. Ultimately, the system disintegrated in the early 1970s, leading to the adoption of floating exchange rates and fiat money after the termination of the Bretton Woods arrangement (Schwartz, 1983). Therefore, the countries' lack of coordination and commitment led to the Bretton Woods dissolution. Once again, Schwartz reinforces the difficulties in coordinating countries within a global financial system.

Expanding the discussion about the Gold Standard, “Was Expansionary Monetary Policy Feasible during the Great Contraction? An Examination of the Gold Standard Constraint. Explorations in Economic History” (Bordo, Choudhri & Schwartz, 2002) examines the Great Depression, aiming to unravel its causes and international dimensions. They evaluate the roles played by monetary factors, banking crises, and the gold standard in both prolonging and intensifying this economic downturn. The authors construct a model to pinpoint the critical determinants of gold flows from the United States to achieve this goal. Next, proceed to subject gold reserves to various hypothetical scenarios to simulate their behavior.

The authors begin briefly reviewing the history of the interwar gold standard. It is important to note that the gold exchange standard was reinstated globally between 1924 and 1927. During this period, central bank regulations typically stipulated a cover ratio for currencies, allocating it between gold and foreign exchange, with the range falling between 30 and 40 percent. By the conclusion of 1928, as many as 35 countries had officially restored the convertibility of their currencies into gold (Bordo, Choudhri & Schwartz, 2002, p.4).

Nonetheless, restoring convertibility to the British pound in 1925 at an overvalued exchange rate and to the French franc in 1928 at an undervalued rate contributed to the uneven distribution of gold reserves. This imbalance was further exacerbated by adopting inappropriate policies by France and the United States (Bordo, Choudhri & Schwartz, 2002, p.4).

They argue that the gold standard was pivotal in propagating the Great Depression through two primary mechanisms (Bordo, Choudhri & Schwartz, 2002, p.4). Firstly, the system of fixed exchange rates inherent to the gold standard, facilitated the transmission of adverse economic shocks from one nation to another. Secondly, the commitment to maintaining the

gold standard discouraged countries from adopting expansionary monetary policies to counteract these economic shocks.

Notably, countries that opted to abandon the gold standard at an early stage experienced a less severe economic downturn than those that chose to remain on it. The persistence in adhering to the gold standard impeded their recovery efforts, particularly affecting smaller, open economies with limited gold reserves. This interpretation is consistent with the prevailing consensus within the literature. This consensus suggests that monetary shocks, primarily stemming from a sequence of banking crises, significantly contributed to the protracted and exacerbated nature of the Great Depression. This viewpoint marks a departure from earlier perspectives, which exhibited a more divided stance on the influence of monetary factors in instigating the Depression within the United States (Bordo, Choudhri & Schwartz, 2002, p.4).

They introduce a simulation model to investigate if the expansionary monetary policy would have been a remedy for the situation. The model was designed to evaluate the potential consequences of expansionary monetary policies implemented during banking panics (Bordo, Choudhri & Schwartz, 2002, pp. 16-21). It evaluates the dynamics between the United States and the global economy under the assumption of perfect capital mobility, a stringent constraint on U.S. policy actions.

The simulation utilizes monthly data from four countries: France, Germany, the United Kingdom, and the United States. Within this empirical framework, they explore two hypothetical scenarios involving expansionary monetary policies. The first scenario involves an expansionary monetary policy initiated after the first banking panic in October 1930, while the second scenario involves an expansionary monetary policy initiated after the crisis associated with the sterling's devaluation in September 1931. Through simulation, the paper traces the trajectory of U.S. gold reserves and the gold-reserve ratio under these hypothetical scenarios, extending the analysis until February 1933.

The simulation results suggest that implementing expansionary monetary policy during banking panics could avert the decline in US gold reserves and the contraction of the US money supply (Bordo, Choudhri & Schwartz, 2002, p.32). In both scenarios, the results indicate that US gold reserves would have remained stable or increased while the US money supply would have expanded. This underscores the authors' argument that the contraction of the US money supply played a pivotal role in exacerbating the severity and duration of the Great Depression

(Bordo, Choudhri & Schwartz, 2002, p.32). Furthermore, they assert that implementing expansionary monetary policy could have mitigated the adverse effects of the banking panics and prevented the spread of the Depression to other countries (Bordo, Choudhri & Schwartz, 2002, p.32).

The findings align with the well-debated Friedman-Schwartz hypothesis concerning the Great Depression (Bordo, Choudhri & Schwartz, 2002, p.4). This hypothesis, presented in “A Monetary History,” posits that what began as a severe yet not extraordinary economic downturn in the United States escalated into the most significant economic contraction in history due to the Federal Reserve's failure to execute expansionary open-market operations. These operations were intended to counteract a substantial decline in the money supply resulting from a succession of banking panics.

Anna Schwartz’s writings on the golden standard started as a way to debate alternative regimes, the fiduciary one versus the Golden Standard. They later turned to the point of adding more of the external scenario to a critical point of the Monetary History: The role of the Federal Reserve in the 1929 crisis. One important outcome when evaluating all of the studies above is that Schwartz does not seem to be interested in restoring the gold standard. Schwartz (1987a) and Schwartz (1987b) seem to be a treatise about its non-viability. Therefore, despite her political ties to Reagan and the conservative’s economic ideas, Schwartz disagreed with the return to the gold standard. Furthermore, the collaboration with Bordo and Choudhri is an empirical validation of her early interpretation of the Fed’s role in the Great Depression, also known in the literature as the “Friedman-Schwartz hypothesis.”

1.4.2 Monetary Policy

This section examines Schwartz's perspectives on monetary policy, the government's role, and the confrontation of Keynesian Ideas.

Another collaboration with Friedman, “The Effect of Term Structure of Interest Rates on the Demand for Money in the United States” (Friedman & Schwartz, 1982), examines the relationship between the term structure of interest rates and the demand for money in the United States. They argue that changes in the slope of the term structure, which refers to the difference between short-term and long-term interest rates, can have counterintuitive effects on the quantity of money demanded.

The foundation of their analysis was grounded in the theoretical framework of money demand that Friedman developed in an earlier paper²⁸ (Friedman & Schwartz, 1982). According to this framework, an augmentation in the slope of the term structure, leading to a reduction in short-term rates while simultaneously elevating long-term rates to maintain a consistent average rate, results in a decrease in the quantity of money demanded.

This outcome might seem counterintuitive, as short-term assets are generally considered closer substitutes for money than their long-term counterparts (Friedman & Schwartz, 1982). One might, therefore, anticipate that a decline in short-term rates would exert a greater upward pull on the quantity of money demanded, outweighing the downward impact caused by the associated increase in long-term rates (Friedman & Schwartz, 1982).

However, Friedman and Schwartz(1982) argue that this counterintuitive result can be attributed to the countervailing influence of the weights assigned to these assets. Generally, when short-term assets are considered closer substitutes for money compared to long-term assets, they receive a higher weight within the appropriate substitute portfolio. Consequently, to maintain a consistent average yield, long-term rates must increase by a magnitude greater than the decline in short-term rates, thus counterbalancing the closer substitutability of short-term assets (Friedman & Schwartz, 1982).

Another collaboration with Friedman, “Does Government have any role in money?” (Friedman & Schwartz, 1986) permeates the realm of political-ideological debate review the current validity of four reasons for government intervention in monetary reform and discuss the desirability of deregulation of financial intermediaries. They also provide insights into the present world fiat money standard and its future prospects.

Friedman and Schwartz (1986, p.40) begin the discussion by evaluating the four “good reasons” for government intervention in monetary reform advanced in Friedman (1959). These reasons are:

1. The resource cost of a pure commodity currency and its tendency to become partly fiduciary.

²⁸ Friedman, M. (1977). Time Perspective in Demand for Money. *Scandinavian Journal of Economics*, 79(4), 397-416.

2. There is a peculiar difficulty in enforcing contracts involving promises to pay that serve as a medium of exchange and in preventing fraud concerning them.

3. The technical monopoly character of a pure fiduciary currency makes it essential to set some external limit on its amount.

4. The pervasive character of money, which means that the issuance of money has important effects on parties other than those directly involved and gives particular importance to the preceding features (Friedman & Schwartz, 1986, p.40)

This idea, presented in 1986 by Friedman and Schwartz, posits that the evidence they compiled strongly indicates that government intervention in the economy often led to instability and inefficiency, sometimes even more so than the opposite. Their research suggests that establishing the Federal Reserve System considered a major reform during the period, ultimately did more harm than good. In their view, adhering to a rigid monetary rule is preferable to allowing discretionary monetary management by the Federal Reserve (Friedman & Schwartz, 1986).

The authors also consider whether the new evidence and new arguments that have emerged in recent years justify revising the earlier summary of “good reasons” why the government has intervened. They suggest that the clear differentiation of three separate questions is one of the valuable contributions of the then-recent writings. These questions include whether determining a unit of account linked with a medium of exchange and the provision of outside money itself can and should be left to the market or if government intervention is necessary. The authors do not provide a specific list of new evidence and new arguments that have emerged in recent years. Still, they suggest that recent scholarly interest in various aspects of monetary reform has centered on three separate but related topics: competition versus government monopoly in the creation of or control over outside or high-powered money, so-called free banking, and the determination of the unit of account and its relation to media of exchange. Their approach to each of the last topics will be discussed next.

Friedman & Schwartz (1986) elucidate the concept of outside money, the cornerstone of existing banking systems. This term refers to money that is not generated by banks but is instead issued by the government. They emphasize that the government’s role in providing

outside money holds a more fundamental position than whether the government should intervene in the provision of inside money by non-government banking institutions.

They discuss various government-issued non-interest-bearing notes and deposits, including United States notes, national bank notes, silver certificates, Federal Reserve notes, and deposits. These instruments are categorized as government liabilities or obligations. However, they underscore a crucial transformation: when convertibility into other assets was suspended, as has occurred globally, all such issues evolved into genuine outside money—pure fiat money (Friedman & Schwartz, 1986, p.43).

Friedman and Schwartz (1986, p.49) examine historical experiences with free banking, highlighting that recent scholars have proposed a less adverse view of it than Friedman and other writers suggested. For example, they reference a reassessment of Scotland's banking experience up to 1845, which advocates for comprehensive banking deregulation based on its findings. Furthermore, they acknowledge the work of other researchers who have reevaluated the United States' pre-Civil War banking era, arriving at a similar conclusion. These scholars argue that prior studies of this period have significantly overemphasized the prevalence of "wildcat banking," excessive issuance of depreciated bank notes, and other negative aspects typically associated with banking in that era (Friedman & Schwartz, 1986).

Overall, the authors present a nuanced perspective on the historical record of free banking, noting success and failure. They emphasize that Scotland's experience, particularly as recently elucidated by White(1984), stands out as the most favorable example. For over a century and a half, Scotland maintained a free banking system characterized by unrestricted entry and minimal government oversight (Friedman & Schwartz, 1986). However, they offer a word of caution, pointing out that historical experiences with free banking may not necessarily provide a clear guide to the future. The contemporary conditions that have given rise to the current unparalleled monetary system may have altered its prospects, following the patterns of earlier paper standards (Friedman & Schwartz, 1986).

Lastly, Friedman and Schwartz (1986 p.56) discuss the future of fiat money, noting that the world's nations are consistently committed to a purely fiat monetary standard for the first time in history. They raise the question of whether Fisher's (1911) overview that "irredeemable paper money has almost invariably proved a curse to the country employing it" would hold true. The authors suggest that this is the most exciting and important current scientific question in

the monetary area and that how it is answered will depend on future developments in the global economy (Friedman & Schwartz, 1986, p.57). However, They do not provide a definitive answer to this question but suggest that it is an area that requires further research and analysis. However, it is important to remember that Schwartz was going back to a commodity-based currency in previous work, as debated before.

They conclude that entrusting monetary and banking arrangements to the free market would likely have resulted in a more satisfactory outcome than what was achieved through governmental intervention (Friedman and Schwartz, 1986, p.59). However, they also acknowledge a persistent challenge: the historical forces that hindered this outcome will likely persist into the future. Friedman and Schwartz (1986, p.59) emphasize that the direction of these forces, whether they lead to significant changes in monetary institutions or maintain the status quo, will be contingent on the unfolding developments in the monetary sphere over the next few decades. Yet, they caution that predicting these developments is particularly challenging as they venture into largely uncharted monetary territory.

Money and Prices in the Nineteenth Century: An Old Debate Rejoined (Bordo & Schwartz, 1980) is a debate over the role of real and monetary forces in determining prices in the nineteenth century. In this paper, the authors provide an analysis of the arguments by W. W. Rostow and W. A. Lewis, as well as a critical evaluation of their theories.

The Rostow-Lewis (R-L) theory, as discussed in Bordo and Schwartz's work from 1980, posits that significant periods of inflation and deflation in British and American monetary history from 1797 to 1914 can be primarily attributed to real factors. These factors include changes in the relative growth rates of agricultural and industrial production, which induce alterations in the relative prices of essential commodities and the overall price level. According to this theory, monetary forces play a passive or "responsive" role in the adjustment mechanism.

One of the arguments put forth by Rostow and Lewis is the "Relative Prices Argument." They argue that continuous shifts in the relative prices of significant commodities, driven by real forces, would continuously impact the overall price level, either lowering or raising it. However, Bordo and Schwartz (1980) challenge this argument, suggesting that while relative commodity price changes may have influenced the overall price level, this influence was likely minor and short-lived.

Another argument presented is the "Passive Money Supply and Flexible Velocity" argument, a fundamental assumption of the cost-push or relative price theory of price level movements. This argument implies that either the money supply or velocity is passive, indicating an unstable demand for money. However, Bordo and Schwartz (1980) point out that evidence dating back to 1870, not only for the United States but also for other countries, indicates a stable demand for money, contradicting this argument.

The fourth argument by Rostow and Lewis discusses the role of gold, as raised in the context of the passive money supply argument. Bordo and Schwartz (1980) explain that Rostow and Lewis argue that changes in the effects of monetary gold stock on money supply were insignificant in both the United States and the United Kingdom during the gold standard era.

However, Bordo and Schwartz (1980) suggest that understanding the impact of gold flows on the domestic money supply requires considering the stability of the ratio of high-powered money to the monetary gold stock (H/G) and the stability of the money supply multiplier.

The fifth argument pertains to interest rates as an indicator of monetary pressure. Bordo and Schwartz (1980) argue that Rostow and Lewis's focus on interest rates as an inverse indicator of excess supply or demand for money is misleading. They contend that this approach fails to distinguish the negative liquidity impact effect of monetary change on interest rates from the effects of medium- and longer-term positive income and price expectations. This issue is particularly pronounced during rapidly rising prices, such as the 1850s and the 1890s.

The final argument concerns the Kondratieff Cycle, in which Rostow and Lewis's theory significantly contributes to comprehending long-term price fluctuations in the nineteenth-century global economy (Bordo and Schwartz, 1980, p.66). According to Rostow and Lewis, the trend price level movements observed in the nineteenth-century global economy are part of a broader fifty-year cyclical pattern affecting major economic indicators, including industrial production, interest rates, and real wages. They contend that the primary determinant of these fifty-year trend movements in the price level and shorter episodes is the terms of trade, specifically the relative prices of agricultural (primary) and industrial (manufactured) products. Additionally, they emphasize the role of innovations and leading economic sectors in explaining the Kondratieff price cycle. Also, this cycle is influenced by factors leading to

unproductive investment, such as wars and gold discoveries, which intensify its impact (Bordo and Schwartz, 1980, p.66).

In another collaboration, Bordo and Schwartz (1980) empirically test Rostow and Lewis's hypothesis, running regressions using United States annual data for the 1870-1914 period. They want to test if wheat prices are a key cause of price movements in primary products to test the implicit R-L low substitution/price inflexibility assumption²⁹ (Bordo and Schwartz 1980, p.67). The results show that pairwise correlations of the regression residuals between wheat and the other agricultural products are negative and low for wheat and tobacco, wheat and Irish potatoes, wheat and corn. It is positive and low for wheat and cotton and wheat and sugar. Thus, they reject the Rostow-Lewis hypothesis.

In "IS-LM and Monetarism," Bordo and Schwartz (2004) explore the relationship between money and other economic variables and how monetarism differs from Keynesian economics.

Bordo and Schwartz (2004) commence their discussion by examining the inception of the IS-LM model, which John Hicks developed in 1937 as a simplification of Keynes's General Theory. This model illustrates the relationship between short-term interest rates and output and became fundamental to Keynesian economics. Nonetheless, monetarists, including prominent figure Milton Friedman, rejected the IS-LM model. They contended that it oversimplified economic dynamics and failed to adequately consider money's role in the economy.

The authors proceed to explore the distinctions between Monetarism and Keynesianism. As exemplified by Karl Brunner and Allan Meltzer, Monetarists emphasized a strong connection between money balances and nominal income, whereas Keynesians viewed this linkage as weaker (Bordo & Schwartz, 2004). Furthermore, Monetarists identified inflation as fundamentally rooted in monetary factors, a viewpoint that was not widely accepted among Keynesians before 1970.

²⁹ About the implicit price rigidity curve Bordo and Schwartz (1980) say: "Thus, R-L argue that continuous increases in the price of wheat in the 1830s and 1890s led to increases in the overall price level because wheat as the leading food staple in the nineteenth century played such an important role both as an input and as final output. Other agricultural prices moved in a manner similar to wheat prices because they were affected by the same real forces, and the rise in agricultural prices induced a rise in industrial prices as a result of an increase in money wages. The implicit assumption here is a low elasticity of substitution between labor and other inputs. Alternatively, the reduction in expenditure on nonagricultural commodities consequent to the rise in agricultural prices did not reduce industrial goods prices because of rigidities. Here the implicit assumption is inelastic demand curves." (Bordo & Schwartz, 1980, p.63)

Friedman, in particular, bypassed the concise rendition of the General Theory embodied by IS-LM and directly critiqued the foundational concepts of Keynesian thought. While he objected to the IS-LM model, Friedman's objections were implicit, and he never directly stated them (Bordo & Schwartz, 2004). Friedman's objections were rooted in his belief that money mattered, contrary to the IS-LM model's assumptions, which, due to its Keynesian heritage, assumed that money did not matter (Bordo & Schwartz, 2004).

In addition, Bordo and Schwartz (2004) note that Friedman was Marshallian and rejected the alternative Walrasian paradigm of "general equilibrium, while the IS-LM model was a general equilibrium model, another point of discordance. They also mention that other Monetarists like Brunner and Meltzer strongly disagreed with the Keynesian approach embodied in the IS-LM paradigm. Still, they were not averse to using general equilibrium models like IS-LM. Much of their work aimed to improve the IS-LM model, differing from Friedman, who largely disregarded it (Bordo & Schwartz, 2004).

The authors also trace the evolution of Monetarism over time. During the 1960s and 1970s, Monetarism represented a radical departure from Keynesianism, but by the 1980s, it had assimilated into the mainstream. Prominent Monetarists like Friedman, Brunner, and Meltzer significantly influenced economic policy, notably in the United States and the United Kingdom (Bordo & Schwartz, 2004).

In the concluding remarks, Bordo & Schwartz (2004) assess the contemporary status of IS-LM and Monetarism. IS-LM remains a component of intermediate macroeconomic textbooks, albeit no longer serving as the primary language for debates among monetary theorists regarding high-level theory, as it did thirty years ago. Instead, it serves as a pedagogical tool for illustrating the economic implications of diverse macroeconomic policies to undergraduates. The authors further remark that Monetarism has evolved and remains relevant in macroeconomic theory, especially in monetary policy analysis.

In the work titled "Money Stock Targeting, Base Drift, and Price-Level Predictability" (Bordo, Choudhri, & Schwartz, 1990), the authors undertake an examination of the United Kingdom's encounter with monetary targets and formulate a method for evaluating the influence of base drift on the predictability of price levels.

The discussion begins by addressing the concept of base drift, which denotes the tendency of the monetary base to expand over time, even when the central bank is actively

targeting a specific money stock level (Bordo, Choudhri, & Schwartz, 1990). This phenomenon arises due to permanent shifts in the demand for money, causing deviations in the actual money stock from the targeted level. Consequently, central banks may need to adjust the monetary base to counteract these deviations and maintain the money stock on the intended target (Bordo, Choudhri, & Schwartz, 1990).

Subsequently, the authors investigate the United Kingdom's experience with monetary targets introduced in the late 1970s as a measure to combat inflation. They discovered that the Bank of England's targeting approach involved embracing full base drift, allowing the monetary base to grow over time to accommodate shifts in money demand. However, this policy faced criticism for introducing more significant uncertainty regarding the money stock's long-term behavior and complicating long-term price stability (Bordo, Choudhri, & Schwartz, 1990).

A methodology for estimating the extent of base drift in the U.K. is developed to evaluate the impact of base drift on the predictability of price levels. Bordo, Choudhri, & Schwartz (1990) employ a theoretical model characterized by flexible prices and rational expectations to illustrate scenarios in which base drift can either elevate or diminish the forecast variance of the price level. This model comprises a series of equations that establish connections among the money stock, price level, nominal interest rate, and stochastic disturbances. Utilizing this model, the authors measure the extent of base drift within the U.K. and evaluate its repercussions on the predictability of price levels.

Their findings reveal a substantial degree of base drift, notably influencing price level predictability over extended periods. Specifically, they observe that the price-level series exhibits a unit root if and only if the money-stock series does, rendering the price level less predictable over lengthy timeframes in the presence of base drift (Bordo, Choudhri, & Schwartz, 1990).

In conclusion, they contend that base drift can yield significant implications for monetary targets and the predictability of price levels. They recommend that central banks consider these effects when crafting monetary policies and explore alternative targeting approaches capable of mitigating the impact of base drift on the overall economy.

This last section discusses Schwartz's views on monetary policy and can be divided into two parts. The first one, her collaboration with Friedman, reveals that she is aligned with his approach to monetary policy. They both agree that adhering to a rule is the best approach,

advising against the government's intervention in the economy and reinforcing their interpretation present in "A Monetary History" that the Fed is an agent that causes more economic disturbance than stability. Besides, they choose not to take sides in the debate about the viability of fiat money.

The second part regards her contributions to Bordo and Choudhri. They contribute to the History of Economics and the History of Economic thought and clash with Keynesian ideas. This reflects the monetarist vs. Keynesian debate at the time and reinforces her position as a monetarist economist.

1.5 Conclusion

Anna Jacobson Schwartz's life and career were marked by dedication, passion, and pioneering contributions to the field of economics. Born into a Jewish immigrant family in New York City in 1915, she overcame the challenges of the Great Depression era to pursue her education and develop a profound interest in economics.

Schwartz's academic journey led her to collaborate with notable economists such as Arthur Gayer and Milton Friedman, who shaped her research interests. Her groundbreaking collaboration work on the British economy, "The Growth and Fluctuation of the British Economy, 1790-1850," established her as a prominent data analyst.

Schwartz's most renowned work, "A Monetary History of the United States, 1867-1960," co-authored with Milton Friedman, remains a seminal contribution to the field of monetary economics. This monumental work once again showcases her exceptional capability for gathering and interpreting vast amounts of data. The book is a testament to her meticulous research methods and her ability to analyze extensive datasets to draw meaningful conclusions about the monetary history of the United States.

However, Schwartz's contributions extend far beyond data analysis and "A Monetary History." Schwartz's diverse body of work encompassed economic history, monetary economics, and economic statistics. With a clearly defined ideological stance, Anna Jacobson Schwartz's views on monetary policy, skepticism toward government intervention, and her challenge to Keynesian ideas are all deeply grounded in her extensive research.

Throughout her extensive career, she amassed an impressive body of work, including books, articles, and book reviews, leaving an indelible mark on the discipline. Her talent for data analysis and interpretation extended beyond her collaboration with Friedman and was evident in her numerous publications and research projects.

Despite being a woman in a predominantly male-dominated field, Anna Schwartz's dedication to her work and her ability to balance her career with raising a family exemplify her resilience and determination. She never considered her gender a significant obstacle to her academic trajectory. However, it is worth noting that she did encounter discouraging comments, such as one from Burns, who suggested that having more children might adversely affect her productivity. This remark, sadly reflective of societal expectations, underscores the additional challenges women often face when navigating the demands of both their careers and family life – a burden that weighs more heavily on women.

In her nearly century-long life, Anna Schwartz's legacy endures through her groundbreaking research, dedication to economics, and exceptional capability for gathering and interpreting data. Her contributions continue to shape the way we understand and analyze monetary policy and economic history. Anna Jacobson Schwartz will always be remembered as a pioneering economist who made enduring contributions to the field and continues to inspire many generations of scholars.

2- CHRISTINA DUCKWORTH ROMER

This chapter offers an intellectual biography of Christina Romer, encompassing a concise biographical overview and a bibliometric analysis of her scholarly work. It delves into her significant contributions to the discourse on postwar stabilization and the Great Depression. Romer's articles are thoroughly examined within the context of the broader economic discussions that unfolded in the *History of Economics*, illuminating her distinct contributions. A miscellaneous section is included, offering a more comprehensive understanding of her work.

2.2 A Brief Biography

Christina Duckworth, Christy to her friends, was born on December 25, 1958, in Alton, Illinois. Due to her father's profession, the family relocated to Canton, Ohio, a manufacturing town where Christy attended high school in the 1970s (Burke, 2013). During this period, she witnessed the economic downturn of the city attributed to the oil crisis and the inflation that affected the American economy (Burke, 2013).

Upon completing high school, Christy pursued her undergraduate studies at the College of William & Mary in Williamsburg, Virginia (Romer, 2020). Originally intending to attend law school and major in government (Romer, 2010), her plans shifted while attending a mandatory class of economics to fulfill a requirement of the major. Under the guidance of a brilliant professor, Christy discovered her true passion for economics (Romer, 2010). Consequently, she earned her B.A. in economics from The College of William & Mary in 1981 (Romer, 2020), marking the initial step toward a remarkable career.

After obtaining her college diploma, Christy commenced her doctoral studies at the Massachusetts Institute of Technology (MIT) (Romer, 2020). Her thesis, titled "The Instability of the Prewar Economy Reconsidered: A Critical Examination of Historical Macroeconomic Data," focused on Economic History and was supervised by Rudiger Dornbusch and Peter Temin (Romer, 1985). Dornbusch's macro-oriented research agenda, primarily centered on international economic crises and emerging countries' issues, and Temin's investigations into

the history of economics influenced Christy's choice of research themes. Although her research aligns with Temin's developments, she has distinctly contributed to the field.

Christina Romer's research primarily centers on the recent history of American economics from the mid-1980s onwards, including contemporary macroeconomic debates and continuing investigations in history. Themes of her interest encompass postwar economic stabilization, the Great Depression, and the role of monetary policy in the economy, aligning closely with Temin's work. However, her unique approach, methods, and conclusions contribute a distinctive style to the academic discourse.

Her dissertation challenged the perceived postwar stabilization of the American economy, proposing a solution to the inconsistency between prewar and postwar business cycle indexes. She reconstructed postwar indexes using the same commodities and methods as the prewar series, revealing that the perceived stabilization was a misconception resulting from comparing inconsistent indexes. Her innovative methodology and findings, published in renowned journals, established historical revisionism as a critical aspect of her research agenda.

Christina's interest in economic history was sparked during her Ph.D. studies as a research assistant for her co-advisor, Peter Temin (Burke, 2013). This period is considered the high point of economic history at MIT, offering graduate students various courses taught by renowned scholars. During a course taught by Temin, Christina met her future husband, David Romer, a Ph.D. student at MIT.

In 1983, during her Ph.D. studies, Christina faced personal economic challenges when her father lost his job, and her mother's teaching position was at risk (Burke, 2013). This experience became a formative event, influencing her focus on crisis and business cycle investigations. She completed her Ph.D. in 1985, and after a brief period at Princeton University, she joined the University of California - Berkeley in 1988, where she remains a Professor to this day.

Christina Romer's contributions extend beyond teaching to editorial roles in prestigious journals, including the *Journal of Economic History*, *Review of Economics and Statistics*, and the *American Economic Journal: Macroeconomics*. Since 2003, she has co-directed the Program in Monetary Economics at the National Bureau of Economic Research. In 2008, she chaired President Obama's Council of Economic Advisers, showcasing the breadth and impact of her career.

Table 3 – Christina Romer’s most cited papers

Rank	Title	Citations	Authors	Publication Source	Year
1	The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks	519	Romer,C.; Romer,D.	American Economic Review	2010
2	A new measure of monetary shocks: Derivation and implications	371	Romer,C.; Romer,D	American Economic Review	2004
3	Federal reserve information and the behavior of interest rates	346	Romer,C.; Romer,D.	American Economic Review	2000
4	Does Monetary-Policy Matter - A New Test in The Spirit of Friedman And Schwartz	254	Romer,C.; Romer,D.	NBER Macroeconomics	1989
5	The Great Crash and The Onset of The Great-Depression	203	Romer, C.	Quarterly Journal of Economics	1990
6	The Prewar Business-Cycle Reconsidered - New Estimates of Gross National Product, 1869-1908	193	Romer, C.	Journal of Political Economy	1989
7	What Ended the Great-Depression	147	Romer, C.	Journal of Economic History	1992
8	Is the Stabilization of The Postwar Economy A Figment of The Data	142	Romer, C.	American Economic Review	1986
9	Spurious Volatility in Historical Unemployment Data	135	Romer, C.	Journal of Political Economy	1986
10	The Nation in Depression	73	Romer, C.	Journal of Economic Perspectives	1993

Source: Web of Science

In 2008, she left the Ivory Tower to act as a policymaker for the first time (Burke,2013). She was chosen because of her extensive work on the Great Depression (Burke,2013). However, there was speculation that it only happened because she was filing the woman’s quota in the economic team (Rampall, 2008). Romer stayed in the CEA for two years, from 2008 until 2010. From 2010 to 2013, she sporadically contributed to the New York Times writing economy columns (Romer,2020).

Since she got her Ph.D., Christina’s intellectual production has been prolific. The Web of Science database registers 45 publications, 34 of which are papers and 7 are proceedings papers³⁰.

³⁰ The other papers are classified as editorial material, literary critics, discussion and meeting summaries.

The following pages bring some bibliometric indicators to evaluate Romer's academic production based on numbers. The data was all obtained from the Web of Science database, and the graphs, tables, and figures are self-elaborated³¹. The most cited papers are exhibited in table 3. It reveals that the majority of the most cited papers are solo studies and were produced during the beginning of her academic life in the late 1980s and early 1990s. Her early work, including *Is the Stabilization of The Postwar Economy A Figment of The Data?* and *Spurious Volatility in Historical Unemployment Data*, came from her thesis are still prominent papers of her career.

Table 4 – Coauthors

Author	Collaborations
David H. Romer	21
Jeffrey A. Miron	3
Chang Tai Hsieh	2
Paul M. Hohenberg	1
Michael A. Bernstein	1
Weil, David N.	1

Source: Web of Science

Romer has not collaborated with many authors throughout her career. Table 4 shows only six coauthors' names. David Romer is her most frequent collaborator, accounting for 21 papers from 45 under her Web of Science database authorship. Besides the coauthored works, she has seventeen solo publications altogether to date.

Regarding the outlets for her publications, Romer has disseminated most of her work in prestigious, top-tier journals. Table 5 illustrates the frequency of her publications in each source from 1985 to 2021, focusing on the ten most frequently utilized outlets. *American Economic Review* and *Journal of Economic History* are at the top of the list, with ten papers published throughout the years.

³¹ Elaborated with the aid of the R Studio software, the bibliomterix R package and Microsoft Office 365.

Table 5 - Sources

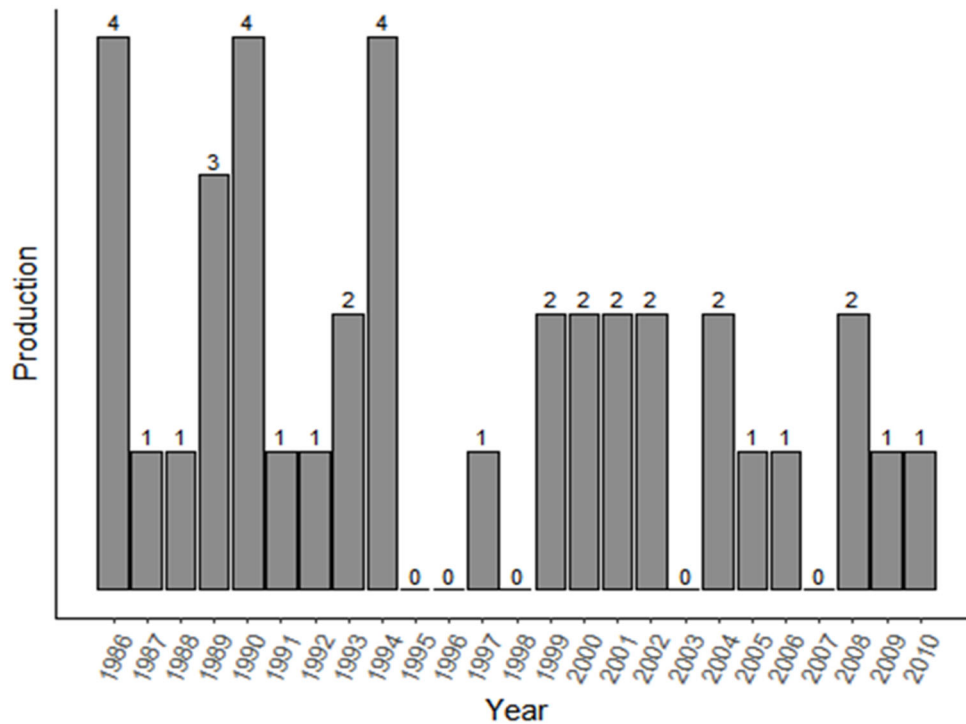
Sources	Articles
AMERICAN ECONOMIC REVIEW	10
JOURNAL OF ECONOMIC HISTORY	10
JOURNAL OF ECONOMIC PERSPECTIVES	4
BROOKINGS PAPERS ON ECONOMIC ACTIVITY	3
JOURNAL OF MONETARY ECONOMICS	3
JOURNAL OF POLITICAL ECONOMY	2
NBER MACROECONOMICS ANNUAL	2
QUARTERLY JOURNAL OF ECONOMICS	2
AMERICAN ECONOMIC JOURNAL-ECONOMIC POLICY	1
AMERICAN ECONOMIC JOURNAL-MACROECONOMICS	1

Source: Web of Science

The fact that only one journal among the top 10 sources is explicitly dedicated to the discipline history of economics must not be interpreted as indicating that the area has less importance in her agenda or has increasingly received less attention over time. Some of her historical work has been published in general-economics journals such as the *American Economic Review*, the *Journal of Political Economy*, and the *Quarterly Journal of Economics*, to mention a few. Therefore, the source's title does not indicate whether the work is historical or not.

The subsequent indicators are bounded by the time frame under consideration in this chapter, from the beginning of her publications in 1986 to 2010. 2010 was selected as it strikes a balance, providing sufficient temporal distance from the events to be regarded as historical while retaining a substantial body of her work for analysis. Figure 7 presents the annual count of Romer's academic output, encompassing articles, conference papers, book reviews, meeting summaries, and other relevant contributions.

Figure 7 – Christina Romer’s Academic production per year 1986-2010

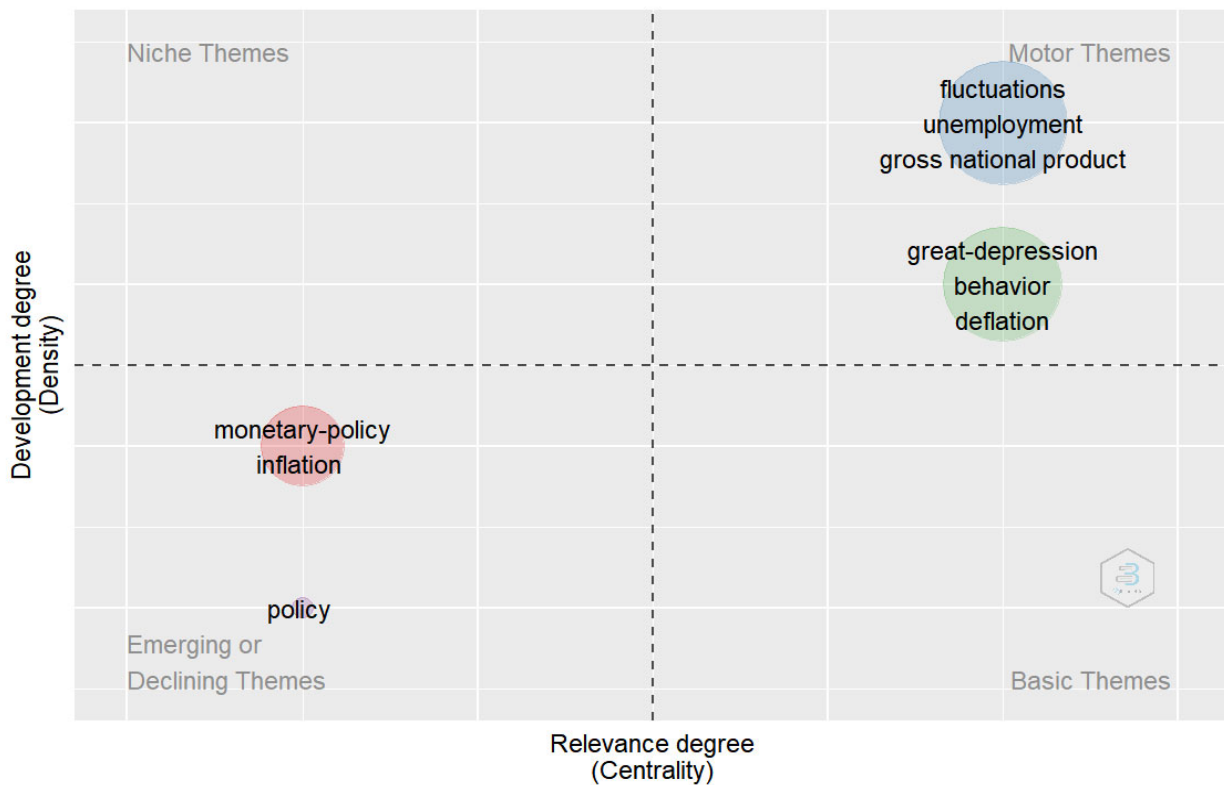


Source: Web of Science

The pattern depicted by the columns in Figure 7 unveils that the initial two decades, encompassing the 1980s and the 1990s, exhibited slightly higher productivity than the 2000s. Dividing the 20 years of production into two halves, from 1986 to 1997, the output averages 2.2 academic works per year. In contrast, from 1999 to 2010, the average output dropped to 1.6, resulting in an overall average of 1.9 academic works per year. Consequently, there is an evident decline in the quantity of intellectual production during the period.

Figure 8 illustrates Romer’s thematic map, an effort to understand which themes are the most relevant in her Research agenda. This map was made by clustering the keywords in her papers and dividing the clusters into four types of themes: motor, niche, emerging or declining, and basic. The themes in the upper-right quadrant are the motor themes. They display high density, meaning they have well-developed internal ties and centrality, meaning they also have well-developed external ties and are central in the research agenda (Della Corte et al., 2019). Motor themes are the most important ones in a field or agenda.

Figure 8 – Christina Romer’s thematic map



Source: Web of Science

Examining the motor theme quadrant in Figure 8, the keywords linked to Romer's research on stabilization are encapsulated within the blue circle. Simultaneously, the keywords inside the green circle in the same quadrant correspond to her work on the Great Depression. Consequently, the most pivotal themes in her research agenda until 2010 revolve around stabilizing the American economy and the Great Depression (or business cycles as a more encompassing concept).

Themes, either emerging or declining, are positioned in the lower-left quadrant, characterized by low centrality and density, indicating their weak and peripheral nature (Della Corte et al., 2019). Monetary policy and inflation occupy this status in Figure 7. Romer's research does not exhibit distinct niches or foundational themes during the period under consideration.

Based on the evidence provided by the thematic map, it is reasonable to conclude that business cycles are the core theme of her research if one considers the words in the green and blue circles as belonging to a business cycle debate. The description of her papers in the forthcoming sections reveals that her early career, defined here as the late 1980s and the early 1990s, is characterized by revisionism more than in the 2000s. Macroeconometric and historical methods are always used together in Romer's papers, so they fit in both areas.

The subsequent sections of this chapter will delve into an intellectual biography of Christina Romer, spotlighting her role as a revisionist economist known for challenging well-established frameworks and sparking insightful debates. The overarching aim is to underscore her influence as a revisionist economist, focusing on two key contributions: the discourse surrounding postwar stabilization and her investigations into the Great Depression. The selected articles will be presented and situated within the pre-existing discourse. Additionally, the chapter will unveil and analyze the repercussions of her revisions to the economic literature.

This chapter holds significance in its unique exploration of the life and contributions of a prominent woman economist. The comprehensive examination of Romer's impact on economic debates has not been documented in the history of economic thought journals or general economics publications. The pioneering nature of this research anticipates a heightened awareness of women's contributions to economic science, an aspect that has unfortunately been understated in contemporary discussions.

2.3 Is postwar stabilization a myth?

During Christina's pursuit of her Ph.D., one of the prevailing stylized facts in macroeconomics asserted a reduction in the volatility of the American economy after World War II (Balke, Gordon 1989). This perception of economic stabilization post-World War II was drawn from analyzing key macroeconomic indicators such as Gross National Product (GNP), unemployment rates, and industrial production. However, like many other macroeconomic aggregates of that era, these indicators were a blend of contemporary survey data for the postwar period and less precise historical data for the prewar era (Romer 1986b). The amalgamation of these series, constructed using different methods, resulted in inconsistencies in the final data.

Romer (1986d) argues that, at that time, standard series were utilized for evaluating historical data. These series were crafted by what she refers to as "the pioneers" in national income accounting. The standard prewar series used in her research include those developed by

Stanley Lebergott for the labor force, employment, and unemployment, Simon Kuznets and William Shaw for GNP, and Edwin Frickey, Frederick Mills, and others for indexes of industrial production (Romer, 1986d).

Up until the 1980s, numerous studies examining macroeconomic relationships readily accepted the alleged postwar stabilization of the American economy as certain. Romer cites economists such as Arthur Burns and Robert Lucas as exemplars who propagated the notion of postwar stabilization. Going as far back as the 1950s, Arthur Burns asserted that an era of stabilization had commenced, as articulated in his 1959 American Economic Association presidential address titled *Progress Towards Economic Stability*³²:

It is a fact of the highest importance, I think, that although our economy continues to be swayed by the business cycle, its impact on the lives and fortunes of individuals has been substantially reduced in our generation. (...) Between the end of the Second World War and the present, we have experienced four recessions, but each was a relatively mild setback. Since 1937 we have had five recessions, the longest of which lasted only thirteen months. There is no parallel for such a sequence of mild—or such a sequence of brief—contractions, at least during the past hundred years in our own country. (Burns 1969, p.102)

Burns's claim that there was “no parallel for the stabilization period in the past hundred years” (p.102) demonstrates the appeal of this idea back then. In the presidential address, Burns emphasizes structural changes and the government's role in stabilizing the economy through countercyclical policies. In his view, one of the main features of the government's interventions is that it gave consumers and businessmen the confidence that contractions would not be allowed to go that far, contributing to some sense of economic safety.

The entrenched belief in the economy's stability was so pervasive among economists that in the 1960s, there arose a question within the economic community about the relevance of studying business cycles. This illusion of stability culminated in the NBER conference, named *Is the Business Cycle Obsolete?* (Gordon, 1986) which yielded a book with the same title. The conference was the second the NBER promoted exclusively devoted to debating the

³² It was published one year later in the American Economic Review and in his own NBER book in 1969.

behavior of Business cycles in the United States. Its title reflects the spirit of the time about the subject, based on the belief that severe fluctuations were a part of the past thanks to the greater postwar stability that no one seemed to question (Modigliani, 1977, p. 140). From the 1950s on, there appears to be an increasing agreement in the profession over a new era of stabilization. Economists were now quarreling about deciding if the economic policy had contributed to it and if a rule or discretionary policy was the best way to avoid instability.

The study of business cycles returned to the spotlight after the 1970s due to the 1974-75 and 1981-82 fluctuations and the attention given to Robert Lucas's work (Gordon, 1986). Regarding postwar stabilization, Lucas (1977, p.10)³³ sustains that the reduction in the amplitude of all series in the postwar era is a striking phenomenon yet to be explained. He proposes that the long period of less volatile cycles shows that market economies are not inherently prone to be unstable:

(...) so long a period of relative stability strongly suggests that there is nothing inherent in the workings of market economies that requires living with the level of instability we are now experiencing, or to which we were subject in the pre-World War II years. That is, attempts to document and account for regular cyclical movements need not be connected in any way to a presumption that such movements are an inevitable feature of capitalist economies. (Lucas, 1977, p.10)

Another acknowledgment of postwar stabilization comes from Modigliani (1977) in a paper that discusses the monetarist vs. Keynesian dispute over the need for stabilization policies. Burns's presidential address is quoted to sustain the decrease in economic fluctuations. Modigliani concludes that "Up to 1974, these (stabilization) policies have helped to keep the economy reasonably stable by historical standards, even though one can certainly point to some occasional failure" (Modigliani, 1977, p.17). He adds that economists should work on making stabilization policies even more effective instead of discarding them the way monetarists suggest. Mayer (1978) compares unemployment rates and income fluctuations prior to and after

³³ Although Lucas does mention the postwar increase in stabilization, this is not the main subject of the paper. His main goal is to explain business cycle theory evolved after the Keynesian revolution and discuss how it can be linked to general equilibrium. Lucas is not alone in using the alleged stabilization to defend that capitalism is not necessarily prone to be cyclical, it seems to be a popular claim among other business cycle theorists as well. Some of the economists sharing this point of view will be discussed further ahead in this section.

World War II. He states that the results “all point in the same direction, which suggests that output fluctuations were more severe before 1930 than in the postwar period, though the difference appears to be moderate” (p.146).

Moving on to the 1980s, it is interesting to notice how Burns’ analysis impacted the new generation of business cycle researchers at the NBER. This finding is not surprising, as Burns and Mitchell co-authored *Measuring Business Cycles* (1946), one of the most important books in this field that established the NBER methodology to approach the issue. Moreover, in 1945, Burns assumed the position of Director at the NBER, succeeding Mitchell (Hetzl, 1998). This change in leadership amplified his influence over the Bureau's business cycle agenda. Collaborating with Mitchell, they garnered global acclaim as foremost scholars in business cycles (Hetzl, 1998, p.24). As an authoritative figure on the subject, Burns likely played a pivotal role in the lasting impact of his perspective on postwar stabilization.

Burns’ influence is observed in the papers discussed during the NBER 1984 conference on Business Cycles³⁴ that resulted in a book released two years later, *The American Business Cycle: Continuity and Change* (Gordon, 1986). The conference marks the NBER's third initiative to deliberate on business cycles, serving as an update to the 1960s conference. Several chapters explore the discussion of postwar stabilization, using Burns's 1959 presidential address as a foundational reference point (Gordon, 1986, p.13). The interpretations of economic fluctuations presented in this book hold particular significance for the investigation outlined in this chapter. Notably, the authors featured in this book were prominent macroeconomists of their time (Eichengreen, 1987), and some later responded to Romer's discoveries on stabilization. Renowned economists such as Rudiger Dornbusch, Stanley Fisher, Olivier Blanchard, and Ben Bernanke contribute as authors, while discussants include Anna Schwartz, Peter Temin, and Angus Deaton.

To illustrate the debate within the chapters of "The American Business Cycle," we will briefly delve into specific discussions. For instance, Blanchard and Watson (1986) scrutinize fluctuations' origins, particularly whether they stem from successive minor shocks or emerge as one substantial random shock. Their engagement in this debate taps into a discussion that has persisted for at least fifty years, enriched by the insights of esteemed economists³⁵. By identifying the nature of cycles, they aim to understand whether business cycles are similar.

³⁴ The conference was held in Puerto Rico on March 22nd - 25th of 1984 (Gordon, 1986).

³⁵ Frisch, Robert Lucas and Paul Samuelson are some examples of economists that debated the nature of fluctuations cited by the authors.

They conclude postwar cycles are not all the same and that the source of fluctuations is a combination of large and small shocks. However, the chapters with which Romer's stabilization work establishes a dialogue are in the fourth and last part of the book, titled "Changes in cyclical behavior." This last part has four chapters that compare the historical and post-1945 periods to debate stabilization.

Zarnowitz and Moore (1986) analyze data encompassing output, employment, interest rates, and prices for both prewar and postwar periods, drawing comparisons between the two. Their conclusion asserts that, post-World War II, the American economy experienced a less severe business cycle characterized by smaller amplitude, lower frequency, and longer expansions than contractions. They attribute this shift, in part, to a structural change in output distribution—shifting from industries with a pronounced cyclical nature to those less sensitive to economic cycles.

Taylor (1986), in his examination of the impact of wages and prices rigidity on output volatility, observes that greater postwar stabilization was achieved despite price rigidity. He contends that stickier wages and prices led to larger output fluctuations than if the prewar flexibility in wage and price responses had been maintained (p.659). Contrary to Taylor's findings, DeLong and Summers (1986) argue that increased price rigidity contributes to a more stable economy. They posit that flexible prices serve as a source of economic fluctuations, asserting that the postwar economy achieved greater stability precisely because of the heightened price rigidity, not despite it.

Confronting all of the findings mentioned above, Romer (1986b, 1986c, 1986d) sustains that the alleged stabilization was just a figment of the data created by comparing two inconsistent statistics segments. She devoted her thesis to confronting the stabilization issue by producing comparable data to both periods. The thesis has three chapters, and each one reexamines the behavior of a different macroeconomic indicator, comparing prewar and postwar periods. The evaluated series are unemployment, industrial production, and Gross National Product. Romer considers those to be the three most important indicators of real economic activity (Romer 1986a). For each one of the series, the historical data chosen were those she claims to be the most frequently used ones at that time. The unemployment series for 1900-1930 was the one created by Stanley Lebergott³⁶, the GNP data was developed by Simon

³⁶ Available in his book *Manpower in Economic Growth* (Lebergott, 1964).

Kuznets 1869-1919³⁷, and Edwin Frickey created the historical industrial production series for 1860-1914³⁸.

Romer extracted at least one article from each of the three chapters. Those papers are recognized in the literature as revisionist work (Gordon³⁹, 1986; Balke & Gordon, 1989; Miron, 1988) since they challenged crystalized beliefs. The debate brought by her thesis compelled economists to reconsider some points regarding postwar stabilization. The ensuing section investigates Romer's challenge and the resulting discourse. It's crucial to underscore that the debate presented in this chapter is distinctly American in nature, aligning with Romer's focus on domestic issues within her country. All contributors involved in the discussion were affiliated with American universities and examined the stabilization dynamics within the United States. Consequently, it may not necessarily reflect the dynamics of a more extensive international dialogue, as such discussions fall beyond the scope of this thesis.

2.3.1 The issue of data inconsistency: Unemployment

“Spurious Volatility in Historical Unemployment Data” (Romer 1986b) was published in the *Journal of Political Economy* in June 1986. The paper came from the first chapter of her thesis. It aims to deconstruct the supposed stabilization of the unemployment series between the historical data and the post-1947 period.

Romer begins posing the problem she aims to confront, namely, that the unemployment series for 1900-1980 is not one single consistent series but several ones pieced together. The contemporary series utilized for the post-World War II era relies on the Current Population Survey, which commenced in 1940. Pre-1940 data, on the other hand, is amalgamated from diverse sources like decadal censuses, state reports, and industry reports. The historical data encounters challenges due to numerous gaps, necessitating creative techniques for resolution. Economists resorted to methods to fill these gaps, and Romer's analysis focuses on the historical period (1890-1940), employing the series developed by Lebergott. In his study, Lebergott employed diverse methods to address data gaps. Romer specifically zeroes in on the period of 1900-1930, as Lebergott employed a single technique to tackle data gaps during this timeframe, rendering the reproduction more straightforward.

³⁷ The series are put together in his book *Capital in the American Economy: Its Formation and Financing* (Kuznets, 1961).

³⁸ Index constructed by Frickey in his book *Production in the United States, 1860-1914* (Frickey, 1947).

³⁹ Gordon mentions her revisionist work in a footnote on page 12.

The technique Lebergott used in the chosen period is linear interpolation. The author interpolates between benchmark census years to obtain annual data for the labor force and employment. Unemployment is calculated by subtracting employment from the labor force.

Romer (1986b) scrutinizes the variability within historical data, contending that the exaggeration of volatility in Lebergott's unemployment series stems from his oversight of cyclical movements in the labor force. Drawing on Coen (1973), Romer asserts that labor force movements exhibit pronounced procyclicality in the postwar era. If this procyclicality extends to the period of 1900-1930, Lebergott's estimations may be inflating actual figures during recessions and underestimating them in expansions. Given that unemployment is derived as a residue of the labor force, this could artificially magnify its prevalence during recessions and diminish it in economic upswings, creating a misleading impression of greater volatility.

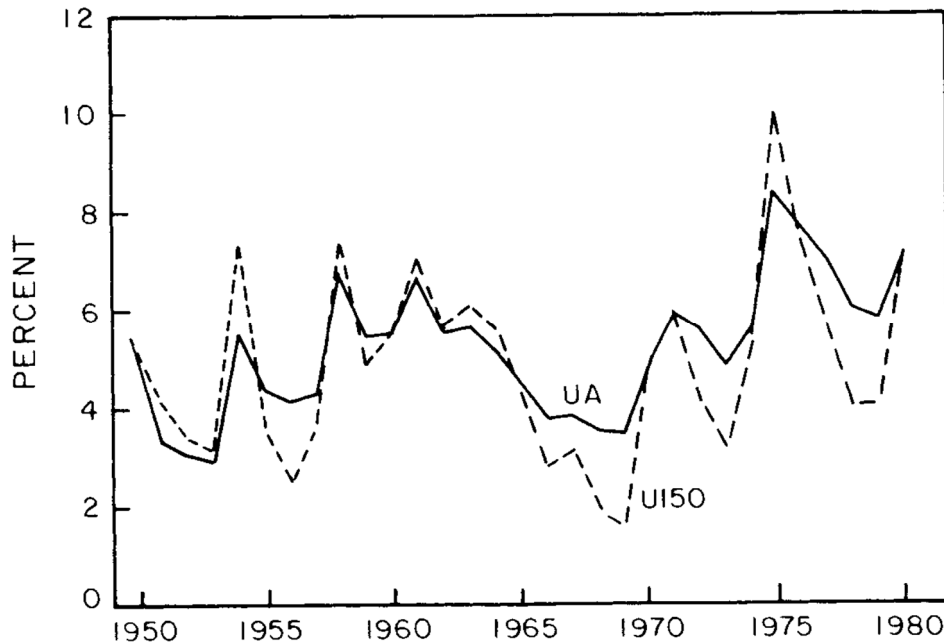
The employment estimates provided by Lebergott do not consider cyclical fluctuations, primarily because of data limitations in specific periods. Instead, output is used as a proxy to measure employment. Nonetheless, this method presupposes a uniform and immediate correlation between deviations in employment from the trend and deviations in output from the trend, implying an inaccurately specified relationship between output and employment. Upon examining productivity and hours estimates, it becomes apparent that this relationship is far from strictly one-for-one (Romer, 1986b). In the postwar period, employment movements exhibit a pro-cyclical pattern, leading to an overestimation of employment during expansionary years and an underestimation during recessions. Consequently, there exists a bias in unemployment figures, contributing to an inflation of the cyclical magnitude of the series beyond its authentic extent (Romer, 1986b).

To understand the potential behavior of postwar data constructed through Lebergott's method, Romer (1986b) crafts a novel postwar unemployment series by replicating the errors inherent in generating the prewar series. Utilizing Lebergott's techniques, she draws on data from the Current Population Survey to establish a new postwar labor force series. Opting for a segmented approach, Romer (1986b) generates five series, each with a distinct base year: 1948, 1949, 1950, 1951, and 1952⁴⁰. The employment series is built considering only the sectors that allow replication of Lebergott's method. It consists in using output data for interpolation, turning it into a proxy for employment. She uses the Federal Reserve Board Industrial Production series for the output data. The sectors selected are manufacturing, construction, and

⁴⁰ That way she can try to approach any influence the initial census year might have on the series.

trade⁴¹, since they represent a substantial percentage of total employment in both eras. All the other sectors are set to their actual value, and no manipulation is made; they are just added to the constructed series as they are.

Figure 9 – Actual and constructed unemployment rates



Source: Reproduced from Romer (1986b, p.21)

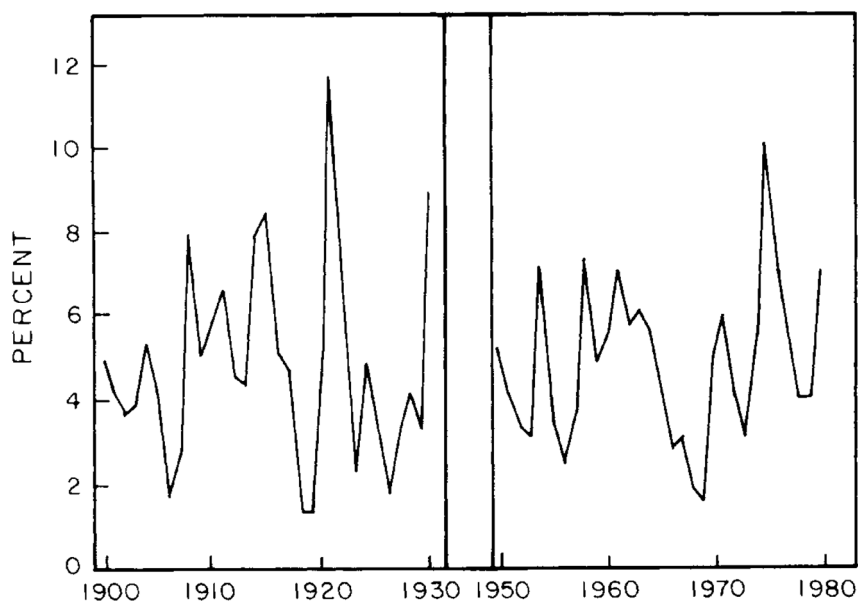
Romer (1986b) provides evidence that fluctuations in hours, productivity, and labor force were also procyclical in the prewar era, mentioning some studies⁴². This evidence implies that the exaggeration of cyclical movements in Lebergott's series is probably true. It also allows her to derive and impose postwar relationships on the historical data since the latter has similar errors to those in the postwar constructed series. Finally, the new postwar estimates for the labor force and employment are combined to obtain the new postwar unemployment series. Figure 9 compares the actual postwar unemployment (UA) series with Romer's (1986b) new one (UI50).

⁴¹ Lebergott uses the output interpolation methods in other sectors as transport and banking, besides the three already mentioned. Nevertheless, Romer finds the sectors she selected are the most important ones. (Romer, 1986b, p.9).

⁴² Bernanke and Powell (1984) find that the relationship between productivity, hours, output and employment are procyclical in manufacturing during prewar and postwar periods. Romer (1986) uses cross-sectional data to estimate the cyclical behavior of labor force and concludes it was also procyclical before 1930.

Now that unemployment data are roughly consistent, they can be juxtaposed to compare both eras. Figure 10 presents the graph crafted by Romer, illustrating Lebergott's historical data for the 1900-1930 period alongside her recently constructed postwar series. With the series now harmonized, any observed alterations reflect structural economic changes devoid of the influence of improvements in data collection. It is evident from Figure 10 that both series exhibit considerable volatility, making it challenging to substantiate any assertions of postwar stabilization based solely on the evidence presented. After inspecting the harmonized series, Romer concludes that the severity of cyclical swings remains consistent in both periods, arriving at this determination by comparing various statistics derived from the synchronized datasets⁴³.

Figure 10 – Consistent unemployment rate series



Source: Reproduced from Romer (1986b, p.13)

⁴³ Regarding the average cyclical amplitude, she finds that the five new postwar series have a slightly greater amplitude (oscillating between 4.30-4.82) than Lebergott's series (4.16) meaning the cycle are equally unstable. As for the standard deviation of the new constructed series is on average ten percent less than the historical data. Christina verifies the perception economists had those cycles were shorter and less protracted in prewar era. To do so she checks the time series proprieties, in order to measure the choppiness of the cycle. The standard deviation of the change in unemployment rate is a measure of the average size of the series yearly fluctuations. When consistent data are compared, they indicate that yearly fluctuations are smaller in the postwar era than in the prewar era. Still, the decrease in the choppiness of the cycle between consistent data is no more than half as large as the apparent decline in the inconsistent data. The autocorrelation in the constructed postwar data is much smaller than that of the actual series, but they are still larger than Lebergott's series. This information means that cycles in the postwar era seem to be in fact more prolonged and persistent than in the prewar era, but this change is slight not dramatic as the comparison of inconsistent series suggests.

Following the discussion of statistical outcomes, Romer proposes two new stylized facts based on consistent data usage. Firstly, she posits that the business cycle from 1900 to 1930 is no more severe than the cycle from 1948 to 1982 (Romer, 1986b, p.19). Secondly, she suggests that, although consistent data exhibit more prolonged cyclical movements in the postwar period compared to the prewar era, the change over time is only about half as significant as indicated by inconsistent data analysis (Romer, 1986b, p.19).

Romer (1986b) then compares the newly constructed postwar and original series to identify systematic errors in the new one. To do so, she derived and tested a model of the relationship between the two series. The model's results reveal that errors in replicating Lebergott's methodology are the misspecification of the output-employment relationship and the oversight of procyclical movements in the labor force. An additional challenge emerges regarding which error exerts the most significant influence. Utilizing a counterfactual technique, Romer (1986b) determines that the misspecification of the output-employment link is responsible for 70% of the cyclical exaggeration in the unemployment rate.

Once the source of mistakes is figured out, a new historical series is finally elaborated. Since some historical evidence⁴⁴ and Romer's own results suggest that productivity, hours, and labor force were procyclical in the prewar era, the misspecification in Lebergott's series represents a source of excess volatility for the prewar era. Her new historical data imposes the same procyclical relationship that employment and the labor force had in the postwar era. The results show that prewar cycles were indeed wildly exaggerated. One example is the downswing in 1890, which was believed to have been almost as bad as the Great Depression, becoming a much milder cycle in the new data.

Despite having provided economists with new historical data, Romer recognizes that they are still "rough" and claims that her main goal in this paper was to "put Lebergott's footnotes back on historical employment series" (Romer, 1986b, 32). Therefore, the main conclusion of this paper is that the postwar economy has not become much more stable when consistent and corrected prewar data are compared.

2.3.2 The issue of data inconsistency: Stabilizing Industrial data and Kuznets's GNP series

In her paper titled "Is the stabilization of the postwar economy a figment of the data?" (Romer, 1986c), Romer conducts a reevaluation of what she identifies as the most conventional

⁴⁴ Hultgren (1960), Bernanke and Powell (1984).

industrial production indexes for both historical and postwar periods. Specifically, she examines Edwin Frickey's index for the historical period (1860-1914). She compares it to the Federal Reserve Board (FRB) industrial production in manufacturing and the FRB materials indexes for the postwar era. Frickey's index significantly influenced researchers' perspectives regarding the economy's performance before 1914, making it a representative choice for prewar indexes (Romer, 1986c, p.315).

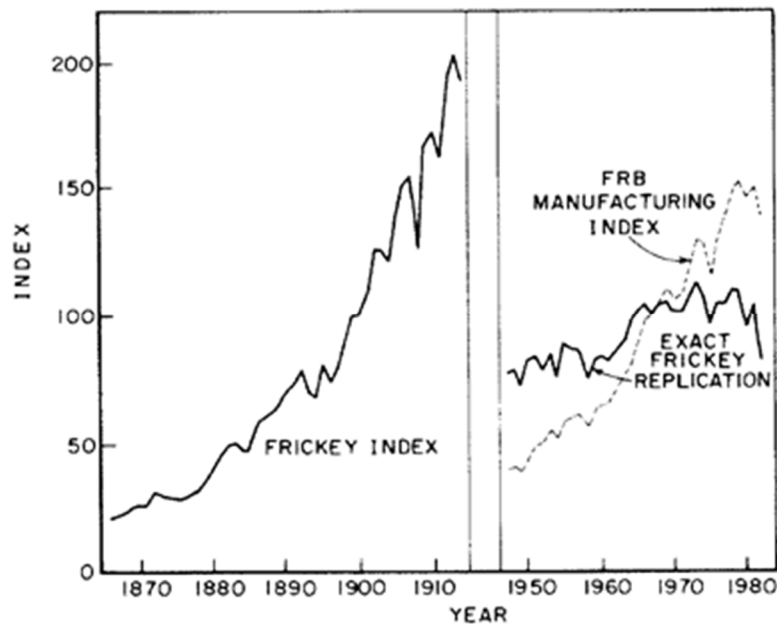
Frickey's index had traditionally been paired with the FRB index of industrial production in manufacturing, which covers the period from 1919 onward as if it was a prewar extension of the latter (Romer,1986c). However, Frickey's index is quantitatively and qualitatively different from the FRB manufacturing index. It was qualitatively different as it is mostly based on raw materials and essential manufactured goods, making it more prone to cyclical fluctuations and more volatile. The FRB indexes, on the other hand, included materials and finished goods. As for the quantitative difference, Frickey uses a sample of 40 commodities, while the FRB manufacturing index uses 200 commodities. The quality of the data in the FRB manufacturing series is superior, making the comparison between the two series inconsistent.

To produce a consistent series, Romer (1986c) makes an exact replication of the Frickey index for the post-1947 period and contrasts her reproduction to the original historical series, the FRB manufacturing index, and to the FRB materials index, which she considers a high-quality imitation of Frickey's index⁴⁵. The comparison shows that her replica and the FRB material index are more volatile than the modern FRB manufacturing series and only slightly less volatile than Frickey's pre-1914 series⁴⁶. Figure 11 compares the indexes.

⁴⁵ Romer (198c, p. 317) claims that a replica of the Frickey index already existed and it was the FRB material index. The series was built using the same methods Fickey used for his series, but includes a wider sample of commodities and also more updated ones. Therefore, it does not preserve the original Frickey's index limitations, and it was necessary to make a new postwar replica of Frickey's index using only the 40 original commodities.

⁴⁶ Romer (1986c., pp. 320-322) uses three measures of volatility: variability, mean cyclical average of the cycle and standard deviation of the growth rates. The statistics for all three measures show the Frickey index, the FRB materials index and Romer's replica are more volatile than the FRB manufacturing series. She also runs significance tests to verify if the difference in volatility between the original Frickey index and its replicas is statistically significant. The results show the difference is not significant, meaning the replicas and the original series are equally volatile.

Figure 11 – Industrial Production, 1866-1914 and 1947-1982



Source: Reproduced from Romer (1986b, p.319)

Her next step was to find the source of excess volatility in the historical series. Firstly, Romer (1986c) finds that the reliance on materials, represented by a small sample of anachronistic commodities, introduces volatility. Secondly, the pro-cyclical nature of investment in materials inventories exacerbates cyclical fluctuations. The relative importance of materials in the series also contributes to this volatility.

Therefore, the primary error in Frickey's method is its failure to account for the procyclical movements of investment in materials inventories. This issue persists in the postwar era, and applying Frickey's methods after 1947 also leads to overestimating the series' volatility⁴⁷ (Romer, 1986c). After comparing consistent series and sorting out the source of errors, Romer (1986c) concludes that mistakes in the historical index rather than actual structural economic changes are responsible for the seeming stabilization of the industrial production series. In other words, the stabilization is a figment of the data. A significant

⁴⁷ Romer (1986, pp.330-331) also compares Frickey's series to another contemporary prewar index, the Shaw-Kuznets industrial series. The latter is based on the value of commodity output, finished goods rather than the quantity of materials. This makes the Shaw-Kuznets series less volatile, representing the cycles more accurately. The volatility of the series is examined and statistics indicate that the Shaw-Kuznets series are in fact less volatile than Frickey's series. The results suggest once again that Frickey's series are excessively volatile because of its methods.

development derived from this conclusion is that one can no longer maintain that government stabilization policies after 1947 were effective (Romer, 1986c, p.333).

Lastly, Romer confronts Kuznets's classical Gross National Product (GNP) series for 1869-1919 in *New Estimates of Prewar Gross National Product and Unemployment* (Romer, 1986d). Kuznets derives his GNP estimates exclusively from Shaw's data on commodity output valued at producer prices. The process involves estimating the trend of real GNP for each sector and then assuming that the percentage deviations from this trend in a specific sector are equal to the percentage deviations from the trend of commodity output.

Romer contends that the commodity output valued at producer prices is significantly more volatile in the postwar era compared to GNP. This increased volatility is attributed to excluding less cyclically sensitive components, such as transportation and distribution, from commodity output. Since these elements are not considered, especially if they performed similarly in the prewar era, Kuznets's methodology may exaggerate the magnitude of cyclical fluctuations in the resulting GNP series. To overcome this problem, Romer (1986d) estimates the actual relationship between gross national product and commodity output instead of assuming they move one for one. First, she obtains new GNP estimates regressing the percentage deviations from the trend of aggregate GNP on the percentage deviations from the trend of aggregate commodity output of postwar data. Next, she uses the estimated coefficient to form new historical estimates of aggregate GNP for the period 1872-1918.

The updated prewar Gross National Product (GNP) estimates are utilized to examine the interaction between GNP and commodity output from 1909 to 1928. The obtained coefficient's validity for this period is tested by exploring the relationship between GNP and commodity output over 1909-1928 and 1947-1982. The findings indicate that the coefficient derived from the combined historical and modern sample closely aligns with the coefficient for 1909-1928. Consequently, the relationship between GNP and commodity output remains consistent across both periods, suggesting that Kuznets's GNP estimation methods magnify this indicator's cyclical volatility. Once again, the prewar economy appears less unstable than previously perceived.

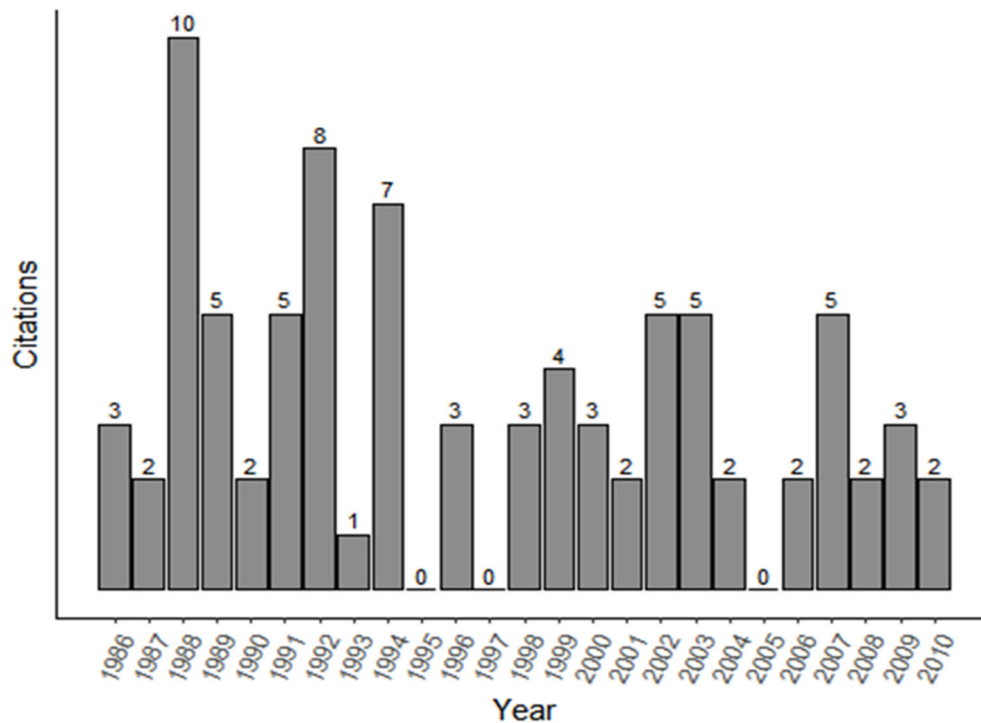
Despite exposing the deficiencies of classical prewar estimates, Romer recognizes that the historical series was being used to "answer questions never contemplated by their original creators" (Romer, 1986d, p.341), but the "unquestioning acceptance of the historical data is unwise" (Romer, 1986d, p.341). Discontent with the status quo of the stabilization debate,

Romer provided a whole new analysis by reassessing historical data and making it consistent with modern data. The three papers' main conclusion is that the antebellum economy was not as unstable as thought. The problem was that the method used to construct historical series made them seem excessively volatile.

2.3.3 Reactions to Romer's Findings

Economists promptly reacted to Romer's findings. Some of them created more alternative versions of prewar indexes only to reach the traditional conclusions about prewar volatility that Romer sought to confront. Others embraced and incorporated her results in their own analysis, providing further revisionism. This section brings some reactions to Romer's assessments that portray postwar stabilization as a myth to find out how her work influenced the history of economics debate. But before discussing the reactions to Romer's findings, it is interesting to analyze the number of citations of the articles discussed in the previous section.

Figure 12 – Romer, 1986b – Citations per year

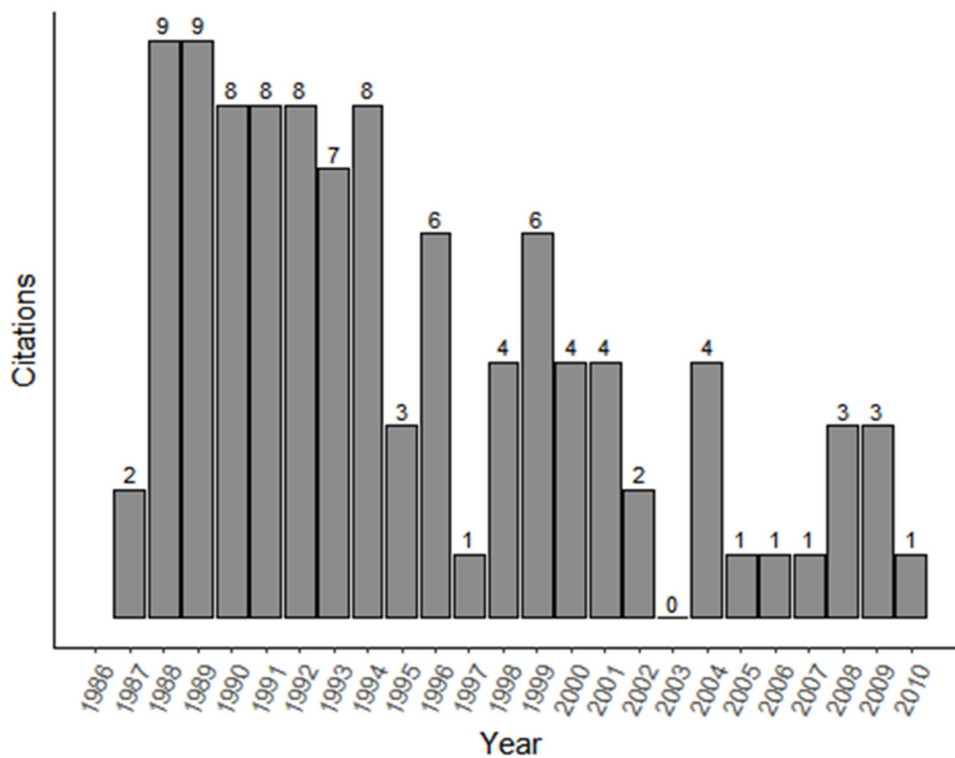


Source: Web of Science

The columns in Figures 12, 13, and 14 illustrate yearly citations. Figure 12 displays the statistics for the paper that reevaluates unemployment data. Notably, there was a heightened interest in this work during the first seven years following its publication, reaching a peak of ten citations in 1988. This information suggests that the impact of this work was swift, sparking a timely and substantial debate, as will be detailed later. Following a decline between 1992 and 2000, there is a discernible resurgence in interest in the issue during the 2000s. While there are some years without citations, it does not diminish the paper's significance, as it continues to be consistently cited throughout the period, averaging three citations per year.

Figure 13 presents the citations for the paper that revises industrial data. It shows a similar pattern to the previous one, with a greater concentration of citations in the first decade after its publication. Nevertheless, this interest is consistently high for seven years, a more extended period than observed in the previous one. The overall trend in Figure 13 is descending. This paper has an average of 4 citations per year.

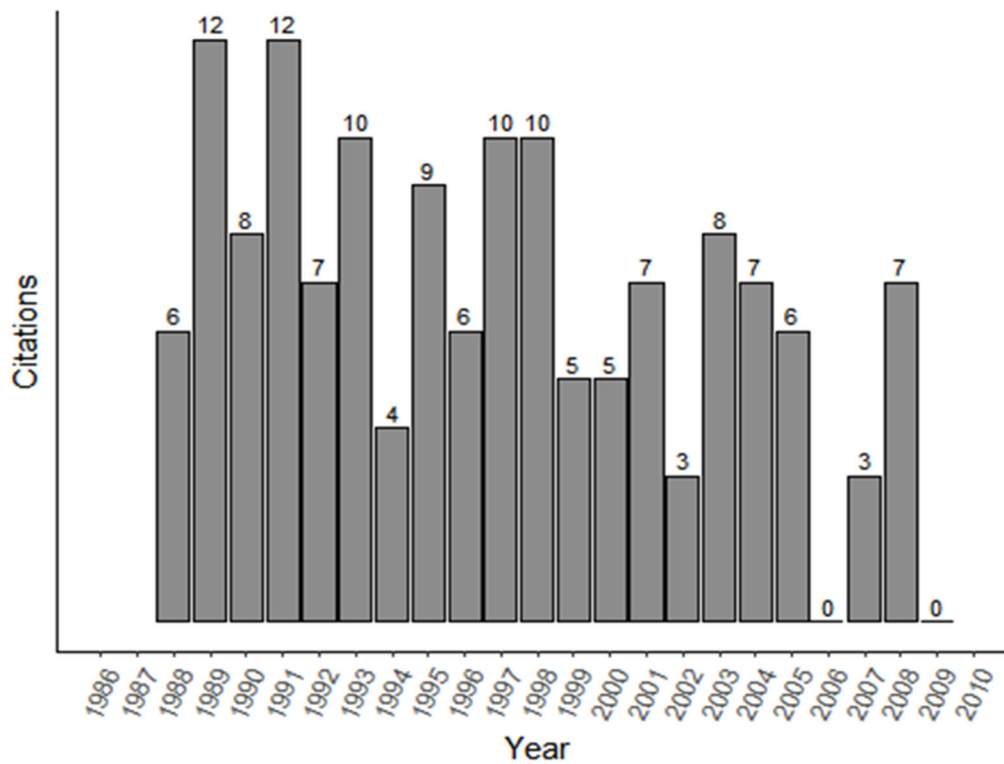
Figure 13 – Romer, 1986c – Citations per year



Source: Web of Science

Figure 14 displays the citations for the paper that reviews the Kuznets GNP series. Once again, there is a higher number of citations concentrated in the first years right after it came out. This is a clear tendency among all three papers, and it is evident in the debate that will also be discussed. The first reactions to Romer's findings are also intense, marked by the defense of stabilization, opposing Romer's critique. Despite the downfall in the number of citations, this paper has a more stable trend than the other two and a higher peak of 12 citations in 1889 and 1991. The total average of citations is 6 per year.

Figure 14 – Romer, 1986d – Citations per year



Source: Web of Science

In June of 1986, Lebergott responded to Romer's reviews of his estimates. It happened only four months after "Spurious Volatility in Historical Unemployment Data" (Romer, 1986b) was published and in the same month that "New Estimates of Prewar Gross National Product and Unemployment" came out. He disagreed entirely with Romer's findings⁴⁸, quickly reacting

⁴⁸ In Lebergott's words:

Romer's view is clear: she finds that economists as skilled as Lucas and Tobin have been befuddled by Kuznets's series for GNP, and mine for unemployment. Her paper, as delivered, "tries to remove some of the mystery" surrounding the Kuznets and Lebergott estimates. (Eighty printed pages of methodology in Manpower, plus 185

to defend his classical series. Lebergott (1986) denies that Romer had in fact, provided better unemployment and GNP estimates. After manipulating her equations, Lebergott claims that the new series she presented was achieved with a single uniform 20 percent adjustment in his own rates, and he considers it to be an oversimplification of his estimates⁴⁹.

However, a significant portion of the response is dedicated to presenting arguments that challenge the imposition of "elasticities from another economic world" (Lebergott, 1986, p. 370), a stance taken by Romer (1986b) when she assumes hours and productivity to be procyclical in the prewar era. Lebergott points to several events that permanently altered the structure of the postwar economy⁵⁰, resulting in relationships that are specific to that particular period.

Also, in June of 1986, David Weir reacted and challenged her results. Weir asserts that imposing a postwar relationship on his estimates for 1910-1918 does not stabilize manufacturing employment since it was very likely anti-cyclical during the historical period. The standard deviation for his unemployment series is halfway between Romer and Lebergott's ones, and he concludes that cyclical fluctuations have become smaller since World War II.

DeLong and Summers (1988) advocate for postwar stabilization, attributing it to implementing effective economic policies. They argue that economic performance improved, and a robust economic structure and well-executed policies mitigated potential shocks that might have led to severe cycles in the past. The authors contend that Romer's findings opposing postwar stabilization "arise because her measures of variability about trends are contaminated by long-run shifts in the stochastic rate of growth of potential output" (DeLong & Summers, 1988, p. 470).

Balke and Gordon (1989)⁵¹ also challenge Romer's revisionism, but unlike the previous authors, they do not point to any weaknesses in her series or argumentation. Instead, they just

pages in National Income and its Composition are insufficient.) Her new series will set them right: it "certainly alters one's perceptions of the pre-Depression economy. . . The stabilization of the postwar economy is much less apparent." (Lebergott, 1986, p.367).

⁴⁹ Regarding the quality of the new data, also points to the risk of obsolescence of Romer's estimates once FRB series are revised.

⁵⁰ To give a few examples, Lebergott (1986, p.369) mentions how a third of a century under the federal wage hour law, the introduction of unemployment insurance, trade unionism, the increase in female labor participation would alter the elasticity of employment supply changing the relationship that had prevailed before 1930. Similarly, the inflation of the 1960-1980 years, and rising interest rates would have changed inventory control policies that were in place before 1930—and hence the hours employment trade-off in response to cyclical change.

⁵¹ Robert Gordon was the editor of the aforementioned NBER business cycle book, *The American Business Cycle: Continuity and Change* (Gordon, 1986), which had many papers investigating postwar stabilization. The authors mention that Romer's results motivated their paper.

construct new data and obtain results that reinforce the existence of postwar stabilization. In the empirical assessment, the authors build new estimates of real GNP for 1869-1908 using components and indicators⁵² methods. Their estimation methods go further than Kuznets and Romer because besides providing commodity output figures, direct measures of output in construction, transportation, and communications are also included in the analysis⁵³.

The innovation of their work is to apply the Hoover-Rees consumer price index to build the GNP series for a period before 1919. The resulting prewar real GNP series is as volatile as the Kuznets-Kendrick series. The findings differ from Kuznets on the performance of individual cycles, providing a new account of business cycles between 1869 and 1908, diminishing some cycles and amplifying others. A surprising outcome is a discovery that the aggregate price level is less volatile than in Kuznets's data and that there has been no reduction in price flexibility in postwar business cycles⁵⁴. They conclude that the American economy does show signs of postwar stabilization of real output behavior, and there is not any tendency for prices to become less volatile over the years.

Diebold and Rudebusch (1992) delved into postwar stabilization, shifting the focus from volatility or amplitude to the evaluation of cycle duration, contrasting their methodology with Romer's (1986b-d). They assert finding compelling evidence of a postwar shift in periodicity, characterized by longer expansions and shorter contractions. This outcome aligns with the stabilization hypothesis, as per their broader definition.

Mark Watson (1994) adopts a distinct approach to validate Romer's results. One of Watson's (1994) hypotheses suggests that NBER reference dates for the postwar period may influence cycles, creating a false perception of stabilization. His empirical analysis supports this notion, highlighting that the scarcity of prewar data compelled early NBER researchers to focus on a limited number of economic time series representing more volatile sectors than the aggregate economic activity. In this scenario, differences in cycle durations become misleading. Hence, prewar business cycle records relied on data with a much narrower focus than that used

⁵²“The specific problem in developing estimates of real GNP for the period before 1909 is that data are missing for most of the non-commodity-producing sectors (...) The set of data available for use in solving this inference problem can be classified as either "components" or "indicators." A component is a variable that is an actual element of real GNP, such as agricultural or manufacturing output. An indicator is a time-series variable that is correlated with real GNP in the post borderline time period when real GNP is assumed to be known.” (Balke & Gordon, 1989, p. 41)

⁵³ Instead of deriving them from some regression relationship to commodity output like Romere and Kuznets did.

⁵⁴ This finding defies the claims of postwar price rigidities and both Taylor (1986) and DeLong-Summers (1986) works. Balke and Gordon (1989) mentioned earlier in this chapter.

to establish reference dates in postwar cycles. Watson (1994) dates postwar cycles using similar data to that employed in prewar dating procedures and concludes that there is little difference in cycle stabilization between both periods, reinforcing Romer's (1986b, 1986c, 1986d) findings.

The responses to Romer's papers emerged immediately after their publication, which is evident in the graphs in Figures 12-14. Many early respondents in the debate defended postwar stabilization, relying on results they had presented before Romer's critique, such as Lebergott (1986), DeLong and Summers (1988), and Balke and Gordon (1992). This substantial impact underscores how Romer's findings had the power to challenge the established foundations of the historical economic debate on postwar stabilization.

2.4 Reassessing the great depression

The examination of the causes and recovery of the American economy from the Great Depression stands as a pivotal point in Christina Romer's career. Her contributions to this issue have solidified her reputation as a specialist in the Great Depression. This recognition played a key role when Michael Froman, the head of economic personnel for the Obama administration transition, reached out to her in November 2008, inviting her to assume the role of Chairwoman of the Council of Economic Advisers (CEA) (Burke, 2013, p.4). Given the central importance of this topic in her professional journey, this section will focus on elucidating her perspectives on the Depression. The primary conclusions derived from Romer's studies on the Great Depression, which will be discussed in this section, can be briefly summarized as:

i) The onset of the Great Depression resulted from a surge in uncertainty that led to a decline in consumption expenditure, subsequently depressing overall economic activity (Romer, 1990).

ii) The recovery from the Depression started in 1933, primarily attributed to an increase in real money supply. Contrary to the notion that recovery only began in 1942 due to war investments, Romer (1992) argues for an earlier starting point.

- iv) Romer (1993) contends that the American Depression was distinctive, serving as the focal point of the global economic downturn and stemming exclusively from domestic factors.

The following pages will elaborate on the abovementioned points and a more in-depth analysis of her conclusions. It is crucial to emphasize that the discussions addressed in this chapter remain centered on the American academic debate.

2.4.1 The Great Crash and the Onset of the Great Depression

In "The Great Crash and the Onset of the Great Depression" (Romer, 1990), an in-depth exploration of the events that triggered the most severe economic cataclysm of the 20th century is conducted. The paper investigates the intricate relationship between the stock market crash of 1929 and the substantial decline in output from 1929 to 1933. While non-economists often perceive both events as synonymous, economists distinguish the output decline that commenced in August 1929 from the later stock market crash in October 1929 (p. 597).

The question of how the crash and depression are related has brought divergent interpretations about how they are linked. According to Eichengreen (1992, p.223), long ago, economic historians dismissed the crash as a relevant influence in the decline of output under the claim that equities were only a fraction of domestic wealth and that the marginal propensity to spend out of wealth was small. However, some economists understand that both events are related, and Romer (1990) is one of them. She explains how the stock market variability affects output not through the effect of wealth on consumers but through the confidence channel.

The ongoing debate emerged alongside the economic upheaval in the early 1930s. Pioneers in this discourse, such as Irving Fisher and Keynes, contended that financial markets were not only the origin but also the conduits of the downturn during the Great Depression (Calomiris, 1993, p. 26). In an attempt to offer an explanation, Fisher (1933) introduced the "Debt-Deflation Theory of Depression" during his presidential address to the Econometric Society, which was published in the first volume of *Econometrica*. In essence, Fisher's theory posits that an unforeseen deflationary event, such as the decline in stock prices, triggers a surge in debt levels, prompting a wealth transfer from borrowers to lenders. These circumstances may lead to over-indebtedness, fostering financial instability that could ultimately result in a

recession (p.341). Fisher first introduced this theory in his 1932 book, "Booms and Depressions," and it was later published in *Econometrica* a year later (p.337).

Keynes (1931) also debates how deflation transfers wealth from debtor to creditor, explaining how it consisted of a problem during that time when taking loans was a common way to achieve funds to buy financial assets. Galbraith (1955) in his seminal work *The Great Crash of 1929* stressed the importance of the crash in depressing the real economy: "The stock market crash and the speculation which made it inevitable had an important effect on the performance or rather the malperformance, of the economy in the ensuing months and years." (Galbraith 1955, p.26).

Friedman and Schwartz (1963) don't view the stock market collapse as the root cause of the Depression but rather as a secondary factor that exacerbated it. Their widely recognized conclusion points to the unnecessarily restrictive monetary policy adopted by the Federal Reserve as the primary cause of the sharp decline in output. They assert, "Partly, no doubt, the stock market crash was a symptom of the underlying forces making for a severe contraction in economic activity" (Friedman, Schwartz, 1963, p. 306). Friedman stated in an interview with *Newsweek*:

The stock crash in 1929 was a momentous event, but it did not produce the Great Depression, and it was not a major factor in the Depression's severity Whatever happens to the stock market, it cannot lead to a great depression unless it produces or is accompanied by a monetary collapse. (1970, as cited in Green, 1971, p.189)

Samuelson also discredited the potential of a stock market devaluation to cause a major Depression. In his words, "our economy, the market is the tail--and the tail does not wag the dog, which is the gross national product" (1970, as cited in Green, p.189). Dornbusch and Fisher (1993) point to the anteriority of the fall in output that started in August of 1929, while the Crash in the stock market only happened later in October of the same year (p.438). Therefore, the authors would see both phenomena as superficially related (Romer, 1990, p.597).

Another point of contention in Economic History revolves around whether the tight monetary policy implemented in the early 1930s was responsible for the Depression. While this hypothesis is generally acknowledged, there is some disagreement on this matter.

Temin (1976) challenges Friedman and Schwartz's hypothesis, asserting that the behavior of nominal and real interest rates suggests that a monetary contraction could not have caused the downturn in 1930 (Romer, 1990, p.600). Temin (1976) contends that the behavior of interest rates implies that monetary stringency cannot be the primary explanation for the real decline during the specified period. Temin proposes an alternative explanation, positing a decrease in overall spending, particularly in consumption. This perspective has gained considerable acceptance and some scholars have attempted to explain Temin's hypothesis, linking it to the crash (Romer, 1990, p.600).

Romer (1990) mentions Mishkin (1978) as one of the economists attempting to comprehend these effects. His groundbreaking work, the first to apply the imperfect capital markets approach to the Great Depression (Calomiris, 1993, p.67), focuses on changes in household balance sheets during this period. Mishkin (1978) discovers that the combined effect of the decline in financial assets and the increase in consumer debts eroded household balance sheets, instilling fear among agents about their future and prompting a delay in durable goods purchases. Thus, his research links the crash to a decline in aggregate demand. Romer (1990) cites Mishkin's work, which aligns with Temin's hypothesis, and critiques Mishkin's use of postwar-constructed data for the interwar period, cautioning that it may overstate the results.

Romer (1990) adheres to her thesis advisor's hypothesis and undertakes a similar investigation to Mishkin's. She elucidates the connection between the financial and real economy by exploring economic agents' apprehension about future income following the fall in stock prices in October 1929. According to Romer (1990), this apprehension would lead to a contraction in consumer spending and output. Therefore, this paper's emphasis on a non-monetary explanation of the causes of the Depression challenges the widely accepted Friedman-Schwartz hypothesis.

Romer (1990) names this interpretation as "the uncertainty hypothesis"⁵⁵ (Romer, 1990, p. 598). It was inspired by Bernanke's⁵⁶ (1983) work, which concludes that facing uncertainty under irreversible choice, investment in the durable goods sector is the most affected one. In

⁵⁵ The notion of uncertainty and the label "uncertainty hypothesis" seems to be applied in the literature to a wide range of concepts. Davidson (1999) debates the different conceptions of uncertainty in economics postulated by many economists such as Knight (1921), Keynes (1937); Lucas and Sargent (1981); among others. Nevertheless, the distinction among different types of uncertainty is out of the scope of this work, Davis (1999) is recommended to deepen the understanding about the issue.

⁵⁶ Bernanke (1983) aims to understand how investment cyclical fluctuations are affected by uncertainty under irreversible choice, which implies a tradeoff between consuming in the present or waiting to spend in the future and enjoy the benefits of being better informed.

short, the considered uncertainty hypothesis postulates that a temporary increase in uncertainty could cause an instant contraction in investment spending, which depresses aggregate production and income (Romer, 1990, p. 598).

Romer (1990) expands the explanation to encompass consumer spending. Specifically, the uncertainty hypothesis posits an inverse correlation between spending on durable goods and uncertainty regarding future income (Romer, 1990, p.598). During this period, heightened uncertainty is expected due to the extreme fluctuations in stock prices, as uncertainty is positively linked to such movements (Romer, 1990, p.598). Consequently, a negative relationship is anticipated between stock market variability and consumer spending on durables (p.598). Conversely, the consumption of nondurables is expected to increase (Romer, 1990, p.602), while the consumption of semi-durables is projected to fall somewhere between durables and nondurables (Romer, 1990, p.607). These patterns align with the fundamental tenets of the uncertainty hypothesis (Romer, 1990, p.603)⁵⁷.

To verify if the relationships above hold during the Depression, Romer performs a quantitative and a qualitative exercise. The quantitative analysis consists in evaluating available consumption data for the period and checking if there is any statistical relationship between consumer spending and stock market variability. She proposes an econometric model to measure the impact of the stock market crash in causing the decline in consumer purchases of durable goods. The equation estimated is:

$$Y_{it} = a_i + b_i Y_{it-1} + c_i Y_{t-1} + d_i V_t + e_i W_t$$

Y_{it} and Y_t represent the percentage changes in a category of commodity output and in total commodity output, respectively (Romer, 1992, p.609). V_t is a measure of stock market variability (considered a proxy for uncertainty), and W_t represents the change in the level of real stock prices (Romer, 1990, p.609).

The qualitative exercise is an innovative contribution of Romer's work since, according to her, the sources used for it had not yet been explored to explain the uncertainty hypothesis (Romer, 1990, p.599). It examines five contemporary forecasts to assess their discourse and evaluate how certain (or uncertain) forecasters became about their predictions after the 1929 crash. The forecasts analyzed are *Business Week*, Harvard Economic Society's *Weekly Letters*, *The Magazine of Wall Street*, *Moody's Investors Service*, and *Standard Trade and Securities*.

⁵⁷ It distinguishes it from other models of consumer behavior that do predict a downfall in the consumption of durables but do not predict a rise in nondurables (Romer, 1990, p.603).

This step is important as forecasters possibly mirror consumers' expectations and might also influence the formation of expectations (Romer, 1990, p.611).

The findings reveal that spending on durables did not experience an increase in 1929 and witnessed a sharp decline in the subsequent year, while spending on semi-durables slightly increased between 1928 and 1929, followed by a decrease between 1929 and 1930. Expenditure on perishables grew in 1929 and saw only a modest decline in 1930 (Romer, 1990, p.607). These consumer spending patterns align with the predictions of the uncertainty hypothesis. The regression analysis for the consumption of durables in the empirical model displays a negative and statistically significant coefficient for market variability, indicating an inverse relationship between the two variables (Romer, 1990, p.609). Regarding perishables, the market variability coefficient shows a positive but statistically insignificant value (Romer, 1990, p.610). For semi-durables, the coefficient is small and negative (Romer, 1990, p.610). Consequently, the empirical test results align with the expectations of the uncertainty hypothesis. Additionally, the model can predict the performance of durables output after 1929, further supporting its validity.

The analysis indicates that right after the crash, four out of the five forecasts became uncertain about their predictions. Harvard's forecast stated in November 1929 that measuring the amount of damage done to businesses was difficult, and *Business Week* claimed that it was hard for analysts to "read the riddle of 1930" (Romer, 1990, p.612). The exception was *The Magazine of Wall Street* in November of 1929, which asserted that the recovery could occur before the new year (Romer, 1990, p.613).

Romer also analyzed the downturns of 1921 and 1924 to verify if forecasts would usually become uncertain of predictions after new downturns. Her findings show that 1929 was an exception, and insecurity was not present in the narratives of any of the forecasts in other years of the decade.

Another change brought to forecasts by the crash was that the behavior of the consumers, almost entirely ignored previously, became part of the specialist's analysis. From late 1929, all forecasts acknowledged that consumers, grappling with uncertainty about their future income, were delaying their spending, thereby affecting businesses (Romer, 1990, p. 615). The decline in consumer confidence was universally attributed to the substantial drop in stock market prices (Romer, 1990, p. 617). Thus, qualitative evidence further supports the uncertainty hypothesis. The combination of quantitative and qualitative approaches allowed

Romer to intricately link the consumer durables revolution, a distinctive feature of the economic boom in the 1920s, to the economic instability of the 1930s (Eichengreen, 1992, p. 223).

In summary, Romer's assertion is that while the crash had a significant impact on the economic downturn of 1929, it was indirect. Nonetheless, other factors played crucial roles in prolonging the depression in the subsequent years, a topic explored in other papers such as Romer (1992).

Some articles that reference⁵⁸ Romer (1990) will be explored to assess the impact of the previously discussed paper. The evaluation of such articles reveals that *The Great Crash's* contribution, which resonates the most in the literature, explains how uncertainty depressed economic activity. The connection between the crash and fall in output seems well accepted in the literature and is referenced in studies belonging to different fields in economics.

Eichengreen (1992) created a survey to identify the central political highlights in the then-recent studies about the Great Depression. Romer (1990) is mentioned as a reference to the topic of the onset of the Depression, recognizing it as being responsible for establishing the channel through which the 1929 crash contributed to the decline in output (p.223).

Bittlingmayer (1998) analyzes the connections between stock volatility and political uncertainty in Germany during 1880-1940. The author follows Romer's (1990) steps⁵⁹ and, inspired by her exercise for the United States, recreates a similar one for Germany. Bittlingmayer regresses the annual percentage changes in industrial production⁶⁰ on changes in current and lagged log volatility, deflation rate, a World War I dummy, and stock returns⁶¹. The conclusion is that politics matters, and the causation goes from political uncertainty to the stock market and output (p. 2255). Periods of political turbulence are reflected in the higher volatility of the stock market, as periods of political stability are accompanied by decreasing stock market volatility (p. 2255). However, he claims that Romer left the question of what causes volatility open in *The Great Crash* (p.2245).

⁵⁸ The criteria for choosing the papers in this section and the following ones is to pick the most cited among those papers which titles and abstracts exhibit most similarities with Romer's papers.

⁵⁹ Bittlingmayer's exercise is also based on Pindyck, Robert S. (1991). *Irreversibility and the explanation of investment behavior*; in D. Lund and B. Øksendal, eds.: *Stochastic Models and Option Values* (North-Holland, Amsterdam).

⁶⁰ Romer (1990) and Pindyck (1991) use the consume on durable goods instead.

⁶¹ This variable captures the effects of political uncertainty, since he establishes that political volatility influences the stock market behavior.

Eberly (1994) evaluates consumers' expenditure on durables, one of Romer's goals in *The Great Crash*. Eberly (1994) tests an optimal rule for households' purchases of durables when they face transaction costs to access the resulting aggregate expenditure dynamics. The evaluations are focused on the automobile market. According to the results, a consumer's durable stock does not depend on income and wealth levels but varies from optimal when income variability or income growth is high (p.423). Romer (1990) is cited to support the results since she provides evidence on how uncertainty affects consumers' purchase of durables.

Engaging in a broader analysis of how stock market wealth influences consumption, Porteba's (2000) work offers a comprehensive assessment of economists' understanding of the issue. The key finding is that fluctuations in stock prices impact the spending behavior of not only stock-owning households but also those without stock, influencing overall consumer confidence. Romer's (1990) study is briefly cited as an illustrative example of research elucidating the impact of stock market variations on consumer spending.

Jansen and Niek (2003) investigate the link between the stock market and European consumer confidence. Their evidence shows that "the stock market–confidence relationship is driven by expectations about economy-wide conditions rather than personal finances" (p.97), implying that the stock market's effects on consumption are not restricted to the impact of the wealth effect. This conclusion is again similar to Romer's (1990) one. Once again, *The Great Crash* is mentioned as a theoretical reinforcement of their hypothesis.

Among the recently published works discussed here, Bloom's (2009) objective is to comprehend the impact of diverse shocks on the economy. The author asserts that uncertainty experiences a significant surge following economic and political shocks such as the Cuban missile crisis, the assassination of John Fitzgerald Kennedy, the Organization of the Petroleum Exporting Countries oil price shock, and the terrorist attacks of September 11, 2001 (p.673).

The findings suggest that "the shocks have large real effects: the uncertainty component alone generates a 1% drop and rebound in employment and output over the following six months" (p.673). Romer (1990) is referenced as an example of the preexisting debate surrounding the connections between uncertainty and economic cycles. The collection of papers citing Romer (1990) presented in the previous paragraphs reveals a consistent pattern in reaction to *The Great Crash*: the results, particularly the impact of uncertainty on output, are acknowledged by other authors without sparking significant disagreements.

Table 6 – Romer (1990) Citations per Journal

Rank	Journal	Frequency
1	JOURNAL OF ECONOMIC HISTORY	10
2	JOURNAL OF MACROECONOMICS	7
3	AMERICAN ECONOMIC REVIEW	5
4	ECONOMIC MODELLING	5
5	ECONOMICA	5
6	EXPLORATIONS IN ECONOMIC HISTORY	5
7	JOURNAL OF ECONOMIC PERSPECTIVES	5
8	INTERNATIONAL REVIEW OF ECONOMICS & FINANCE	4
9	JOURNAL OF MONETARY ECONOMICS	4
10	OXFORD REVIEW OF ECONOMIC POLICY	4

Source: Web of Science

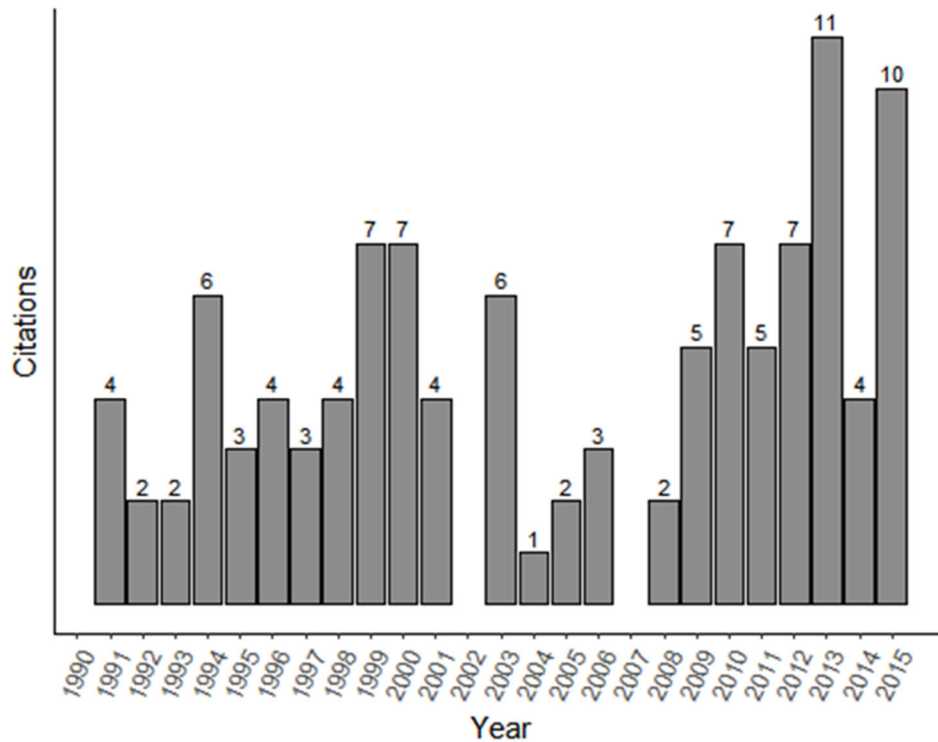
Romer's work attracted the attention of a diverse group of researchers. There are 109 total citations of the paper from 1991-2015⁶². The citations are distributed among 107 journals from different areas, such as the *Journal of Monetary Economics*, *Econometrica*, *Journal of Political Economy*, *Journal of finance*, *Journal of Post Keynesian Economics*, among others. Table 6 shows where it was more often cited. Even though it is no surprise that the *Journal of Economic History* comes in the first place, the variety of journals in which the paper has been mentioned indicates that the work popped the bubble of the history of economics and macroeconomics, Romer's original areas.

Figure 15 displays the distribution of the citations from 1991 to 2015. Although this chapter's analysis emphasizes academic production until 2010, it is interesting to extend the period further to verify if the 2007 crisis impacted the interest in the work. The first peak of citations occurs in the late 1990s and early 2000s. Most of the debate promoted by citing papers

⁶² The period in the graph is stretched after 2010 to verify if the 2007 crisis caused any long-lasting changes in the interest for the paper.

during the first peak broadened the understanding of the Great Depression. They are not related to economic events of the time⁶³.

Figure 15 – Romer (1990): Citations per year (1990-2015)



Source: Web of Science

The papers discuss uncertainty, consumer behavior, deflation, financial crises and investment during the 1930s, and other related themes. There is a decline in the citations from 2000-2008 and a resumption in the numbers from 2009-2013. In 2013, the series reached its highest peak of 11 citations. The second peak of citations brings papers concerned about a contemporary economic disaster. The papers discuss the Global Financial Crisis of 2007-2008 and try to find links between the latter and the Great Depression.

Nevertheless, those papers consist of a minority, and the resumption of citations cannot be attributed to them, as the main interest was still to broaden the knowledge about the events

⁶³ One exception is Wood (1999) that examines historical reactions to crashes and how they became (or not) a crisis, applying the lessons learned in the past to the South-east Asia crisis that was happening.

of the 1930s. *The Great Crash* has an average of 4.74 yearly citations. That number and a quick look at the graph in Figure 10 indicate that the paper has kept its ability to spark a debate over the years.

2.4.2 The beginning of the end

In the article “What Ended the Great Depression?” Romer (1992) investigates the recovery of the American economy from the 1930 economic collapse. She argues that until then, the scope of the analysis about the Depression was somewhat restricted since they mainly focused on two points: the causes of the downturn in 1929-1930 and the turning point in 1933 when the economy started to bounce back (p.757). After explaining the uprise, studies would take a leap to 1942, when the economy was finally back to full employment. Therefore, the story of economic developments between 1933 and 1941 had usually been overlooked (p.757), which left a gap in the knowledge about the retrieval from the Depression.

Romer’s (1992, p.758) account highlights the existence of what she terms the "conventional wisdom" regarding the recovery of the American economy. This prevailing wisdom typically rejects the notion that “aggregate-demand” stimulus played a role in facilitating the recovery, attributing any resumption of growth in the period to self-corrective mechanisms. Within this framework, the only recognized aggregate-demand stimulus capable of influencing the recovery is associated with the World War II efforts (Romer, 1992, p. 758).

It is noteworthy to identify some figures who might fall within the scope of the "conventional wisdom" as Romer (1992) outlined. For instance, Temin and Wigmore (1990) are cited as an example of a work that offers a sound explanation for the turning point in 1933 but doesn't delve into the analysis of the recovery post-1934 (Romer, 1992, p. 757). Hence, based on the periodization of their work, they align with the conventional wisdom. E. Cary Brown (1956), Friedman and Schwartz (1963), Bernanke and Parkinson (1989), and DeLong and Summers (1988) also fit this description, representing authors who undermine the efficacy of aggregate demand in steering the economy toward recovery (Romer, 1992, p. 758).

However, some authors only fit the description partially, as in the case of E. Cary Brown (1956). The scholar is one exception to Romer’s observation of the “tendency to let the story

drop” after 1933 (Romer, 1992 p. 757) since his analysis comprehends the entire decade of 1930. Brown (1956) investigated the effects of fiscal policy⁶⁴ in the American economy throughout the 1930s using a Keynesian multiplier model⁶⁵. The results prove that while the federal government’s fiscal policy was increasingly expansionary during the thirties, it was not increased sufficiently to offset the contractionary effects of local and state government’s constant shrinkage on expenditures (p. 866). The fiscal policy was not expansive in this period because of the sharp increase in taxes passed at all government levels, compensating for any positive effects from the rise in total government purchases of goods and services (Brown, 1956, p.867). He concludes that fiscal policy did not aid the economic recovery from the 1930s Depression. Not because it was a failure but because it was not properly tried (Brown, 1956, p.863).

Friedman and Schwartz (1963) also deviate from the narrative of "letting the story drop," as evidenced by their work, "A Monetary History," which dedicates an entire chapter to the analysis of the 1933-1941 period. Chapter 9 acknowledges the fast recovery rates of the period; however, it is highlighted that the most important feature of the recovery is its incompleteness⁶⁶, not its fast pace (p.493). Friedman and Schwartz’s (1963) data reveal an overall rapid gold inflow⁶⁷. The Treasury reacted to this inflow by buying gold, a decision that boosted high-powered money (p.506). The increase in the money stock is described as a result of independent policy decisions, meaning it was not the result of a response to a business expansion. As in other chapters of the book, they associate the movements in the stock of money to subsequent movements in income and assert that the rapid growth rates observed between 1933-1937 and 1938-1941, as well as the 1937-1938 recession, were a result of monetary policy changes.

The 1937 decrease in the money stock is portrayed as a result of the Federal Reserve decision to raise reserve requirements ratios to absorb banks’ excess reserves, and the Treasury decision to sterilize gold inflows also attempting to reduce excess reserves (p.544). Hence, the

⁶⁴ Considering the expenditure on the three levels of government, Brown (1956) finds that during the 1930s the direct effects of the fiscal policy on aggregate full-employment demand had a markedly better performance than the one observed in 1929 only in the years of 1931 and 1936. During most of the decade, the impact of fiscal policy was only slightly above, equal or lower to its 1929 level.

⁶⁵ Browns’ results are often cited in the literature about the Great Depression.

⁶⁶ Despite the growth that occurred, employment and income were below their respective 1929 peaks during the whole period.

⁶⁷ The rise in the gold inflow is attributed to the upward revaluation of the gold price in 1934 and the flight of capital to the United States from Europe as a consequence of the imminence of World War II (Friedman and Schwartz, 1963 p. 544).

contraction in the money stock in 1937 was followed by a recession. The periods of growth, as already mentioned, reflected the money stock upsurge that followed a rise in the gold inflow caused by the decision of the Treasury not to sterilize it. However, the resulting rise of the money stock was a consequence of the Federal Reserve decision not to control the fluctuations of high-powered money anymore (p.507), not the primary goal of the Treasury's decision. Recovery was nevertheless described as unfinished before 1942. Romer (1992, p.758) understands that Friedman and Schwartz were more interested in explaining how the Federal Reserve's inaction played a role in prolonging the Depression than in reporting the monetary developments that accelerated the recovery.

As for DeLong and Summers (1988), they briefly comment on the Depression period. The authors state that the economic recovery from such a significant drop in output proves that output fluctuations are only transitory (p.466)⁶⁸. They point to the failure of the government's deficit attempts to become a substantial share of the American product before Pearl Harbor (p.467)⁶⁹.

Romer's goal in *What Ended the Great Depression?* is to increase the understanding of the economic developments between 1933 and 1942, filling in the gaps she found in the narrative. Her results defied the traditional narrative, showing that a significant recovery was underway during that period, not because of a self-correction mechanism but due to a traditional aggregate demand stimulus in the form of a monetary expansion.

Romer's main disruption with the traditional wisdom about recovery stems from changes in the focus of the analysis. Whereas most of the authors she mentions investigate the influence of fiscal policy on the economy, Romer takes a different route and evaluates the role of monetary policy in depth.

Diverging from Friedman and Schwartz (1963), Romer (1992) sees the fast growth rates during 1933-1942 as a critical indicator of an early recovery that had been overlooked, meaning the incompleteness of the process is not its main feature. Another divergence with Friedman and Schwartz (1963) is that even though they also acknowledge the role of monetary policy in economic growth after 1933, Romer (1992) takes an extra step by developing an empirical

⁶⁸ The authors do not discuss in depth the causes of the depression or the recovery. They make use of the behavior of the economy during the depression mostly to reinforce the choice of the specification of the model they present.

⁶⁹ They also add that even when fiscal deficit becomes a relevant share of GNP after 1941, more than five-sixths of the decline in output relative to the trend had already been compensated for (DeLong & Summers, p.467), reinforcing the idea of little effectiveness of fiscal policy.

model to show how causality goes from monetary policy to the real economy. This model also allows for the measurement of the significance of the impact of the money supply.

Advancing to Romer's paper, she evaluates the performance of GNP for the 1933-1942 period and notices that between 1929 and 1933, real GNP declined 35 percent. Soon after, it almost fully recovered, rising 33 percent in 1933 – 1937. For instance, in 1938, real GNP experienced a decline of 5 percent, only to rebound with a remarkable 49 percent increase between 1938 and 1942 (Romer, 1992, p. 760). Romer (1992) attributes this significant recovery to an augmentation in the money supply. To substantiate this assertion, Romer (1992) constructs a macroeconomic model aimed at gauging the impact of fiscal policy, monetary policy, and other factors influencing autonomous economic growth during the period (residual) (p. 761). The model, represented by equation 1, seeks to address the question: How would GNP have behaved if fiscal policy and the money growth rate had been maintained at their typical pre-Depression levels?

$$\text{output change}_t = \beta_m (\text{monetary change})_{t-1} + \beta_f (\text{fiscal change})_{t-1} + \varepsilon_t \quad (1)$$

To summarize the empirical strategy, the values for the policy multipliers (the parameters β_m , β_f) are obtained using 1921 and 1938 as references⁷⁰. Once the multipliers are known, a simulation is made, and values are adjusted to construct a counterfactual⁷¹ path that estimates how the output would look under typical policy⁷² during 1933-1941. It is now possible to compare the counterfactual “normal policy path” to the actual growth rates and verify if fiscal and monetary policy impacted the recovery.

Figure 16 displays the results and confirms what many authors had already discussed: fiscal policy (on the left) had a negligible influence on the resumption of growth. Monetary policy, in its turn, had an outstanding performance. The results reveal that had the economy undergone the normal monetary policy path (on the right), the recovery from the Depression

⁷⁰ Romer (1992) obtains the multipliers of fiscal and monetary policy by substituting data for the years 1921 and 1938 in her model's equation. The dates were chosen because as in the mid- and late 1930s, monetary policy decisions were independent. Monetary policy decisions affected output and since they were not related to movements in the real economy, they are ideal to understand the net value of the effect of policies in the economy.

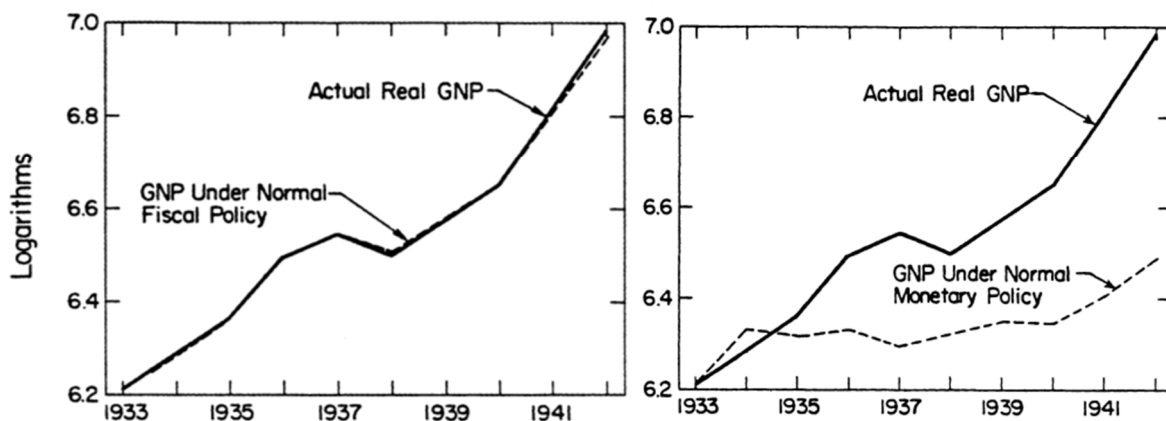
⁷¹ To achieve that, she follows the strategy: “the multiplier times the policy measure lagged one year shows the effect of policy on the deviation of output growth from normal in a given year. If one subtracts this effect of unusual policy from the actual growth rate of real output, one is left with estimates of what the growth rate of output would have been under normal policy. Accumulating these growth rates of real output under normal policy and then adding them to the level of output in a base year yields a series of the levels of output under normal policy” (Romer, 1992, p.766-767).

⁷² “Normal policy” means the path of real GNP under the assumption that the fiscal policy and money growth rate were held to its normal pre-1929 levels over the mid- and late 1930s.

would not have happened during the mid-and late 1930s. The gap between the solid and dashed lines illustrates how each policy influenced growth in Romer's model. As shown in the graph, the impact of monetary policy proves undeniably essential for recovery, which makes the self-correction versions doubtful. Romer (1992) sustains:

These calculations suggest that monetary developments were crucial to the recovery. If money growth had been held to its normal level, the U.S. economy in 1942 would have been 50 percent below its pre-Depression trend path rather than back to its normal level (p.768).

Figure 16 – Actual Output and Output Under Normal Fiscal and Monetary Policy, 1933-1942



Source: Romer (1992, pp. 767, 769)

Romer (1992) contends that an autonomous monetary policy played a pivotal role in influencing output by increasing the money supply. The growth rate of high-powered money, translating into an uptick in M1, surged at an average rate of nearly 10 percent per year from 1933 to 1937, reaching even higher rates in the early 1940s. This augmentation in the money supply triggered a conventional interest-rate transmission mechanism response, as elaborated upon shortly. The boost in the money supply resulted from the gold inflow, instigated by the combined effects of the 1933 dollar devaluation and the subsequent capital flight from Europe due to political instability after 1934 (Romer, 1992, p. 759).

The 1933 devaluation, engineered by the Roosevelt administration, aimed to stimulate a gold inflow and foster recovery through inflation (Wigmore, 1987, p. 743). As the devaluation occurred before the commencement of economic recovery, it cannot be construed as a response

to cyclical behavior aimed at stimulating real growth (Romer, 1992, p. 774). Consequently, the devaluation can be characterized as an independent policy decision.

Another factor contributing to the recovery was the Treasury's decision not to sterilize the intense gold inflow, which allowed the money supply to grow⁷³. This decision was mainly a consequence of limitations of the Treasury sterilization process but also partially a result of the desire to stimulate the economy via easy money, culminating in inflation (Johnson, 1967, as cited in Romer, 1992, p.774). Once again, this decision was not a response to variations in aggregate demand. The Federal Reserve, in turn, remained cautious throughout the recovery, not engaging in attempts to change the money supply (Romer, 1992, p.773). Therefore, the economic stimulus the expansionary monetary policy generated resulted from an active and independent policy decision⁷⁴.

Due to the monetary expansion, real interest rates experienced a decline in 1933, persisting at low or negative levels for the majority of the second half of the 1930s (Romer, 1992, p. 759). The reduction in real interest rates occurred because nominal rates were already so minimal that a monetary expansion could only impact the economy by instigating inflation expectations (Romer, 1992, p. 775). Lower real interest rates likely spurred interest-sensitive spending, particularly on durable goods, fostering real growth (Romer, 1992, pp. 759, 781). In essence, the consensus is that an aggregate-demand stimulus played a pivotal role in rescuing the American economy from the depths of the Depression, with the recovery initiating as early as the mid-1930s.

Romer has not only broken with what she describes as the conventional narrative, but her results also discredit the liquidity trap hypothesis as an explanation for the Depression. The liquidity trap argument makes no sense since the monetary policy aided the resumption of economic growth, increasing the monetary base in a scenario of high uncertainty and low nominal interest rates. In her description of the recovery, at some point, liquidity preference was offset by the adoption of inflationary expectations by the individual, clearing the path for growth. Other authors, such as Temin and Wigmore, have already investigated the liquidity trap (Eichengreen, 2016). Her results also go against any claims defending that the progressive

⁷³ For a further understanding of how sterilization affected the economy during the gold standard the reading of Eichengreen and Sachs (1985) is recommended. Eichengreen, B., & Sachs, J. (1985). Exchange Rates and Economic Recovery in the 1930s. *The Journal of Economic History*, 45(4), 925–946.

⁷⁴ And partially the result of “a lack of understanding about the process of exchange market intervention” (Romer, 1992, p.774).

reforms of the New Deal ended the depression since the monetary policy was the natural source of recovery.

Moving forward to verify the impact Romer (1992) had in the literature, the paper has 74 citations distributed across sixteen different Journals from 1993 to 2015. The average number of citations per year is 3.52, and the journals that cite her work more often are not concentrated in the field of History of Economics; only 3 out of 10 are from that area, as displayed in Table 7.

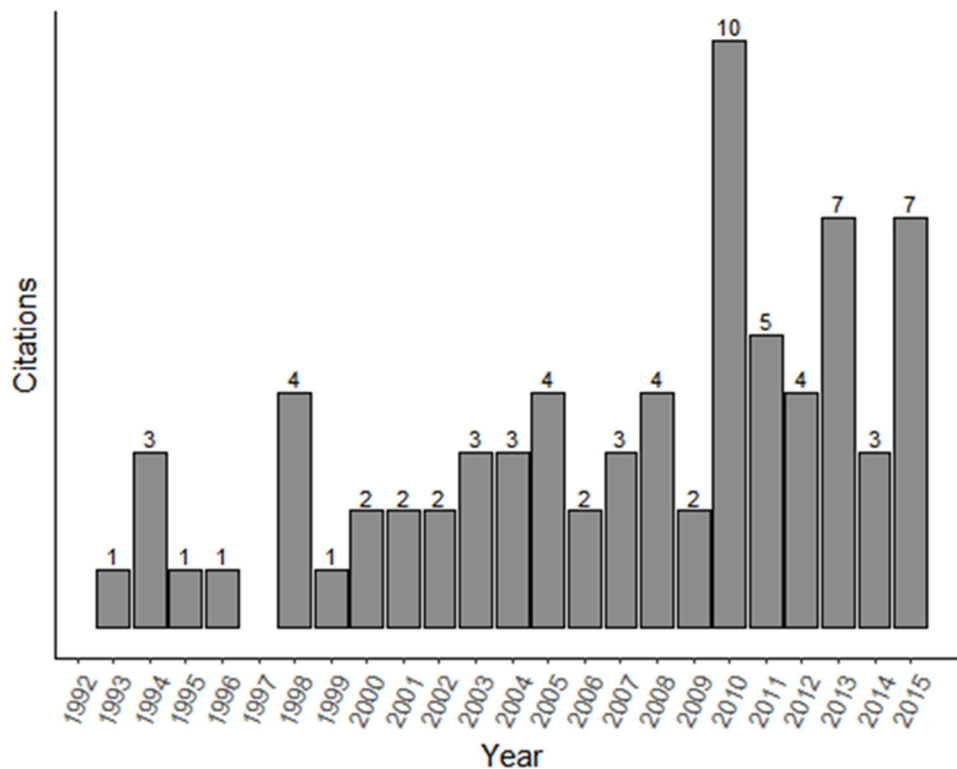
Table 7 – Romer (1990) Citations per Journal

Rank	Journal	Frequency
1	EXPLORATIONS IN ECONOMIC HISTORY	10
2	JOURNAL OF ECONOMIC HISTORY	9
3	AMERICAN ECONOMIC REVIEW	7
4	BROOKINGS PAPERS ON ECONOMIC ACTIVITY	6
5	OXFORD REVIEW OF ECONOMIC POLICY	6
6	JOURNAL OF MONEY CREDIT AND BANKING	5
7	LIOMETRICA	3
8	INDEPENDENT REVIEW	3
9	JOURNAL OF MACROECONOMICS	3
10	CANADIAN JOURNAL OF ECONOMICS	2

Source: Web of Science

Figure 17 displays a graph of citations to the paper from 1993 to 2015. The period considered in the graph has been stretched to 2015 to evaluate if there was a brief peak of interest shortly after the 2007-08 crisis or if this increase in interest persists. The graph reveals an increase in citations after the 2000s, and an outstanding peak of interest in the paper was noted in 2010. The number of citations fell after 2011 but remained slightly higher than pre-2010, indicating a growth in the interest for this paper. The 2007-2008 contraction and Romer's position as chair of the CEA until 2010 might have contributed to improving its visibility. The reactions to What Ended the Great Depression will be discussed next.

Figure 17 – Romer (1992): Citations per year (1992-2015)



Source: Web of Science

In 1995, Anna Schwartz responded to "What Ended the Great Depression" with a co-authored study. This response holds significance because Schwartz and Friedman developed one of the most renowned hypotheses regarding the causes of the Great Depression, a hypothesis challenged by Romer (1992). Bordo, Schwartz, and Choudhri (1995) sought to assess whether the Great Contraction would have been less severe if the Federal Reserve had not contracted the money stock. Utilizing an empirical model based on interwar data, the authors examined the performance of a counterfactual policy (Bordo et al., 1995, p. 503). The results indicate that with a stable money policy, the Depression would have been mitigated and shortened, resulting in a severe recession rather than a full-blown depression (Bordo et al., 1995, p. 503). This finding contradicts Romer's assertion that monetary expansion was a crucial factor in reversing the decline in output. As stated by the authors:

If our simulations are valid, then the extra monetary stimulus that Romer [1992] argues was essential to produce recovery after 1933 would not have been necessary. In fact, under all of our constant money growth counterfactuals, simulated output is well above the actual output throughout the 1933-41 period (Bordo et al., 1995, p.503).

It is common for some studies to only briefly mention Romer (1992) to contextualize their debates or reinforce their hypothesis and results with Romer's findings. Fishback et al. (2005) investigated if the New Deal programs stimulate local economies. Romer's (1992) description of the GNP behavior during the 1930s is mentioned to make the point that the output level only returned to normal in the 1940s. Klug et al. (2005) use a set of forecasts by railroad shippers to understand how contemporary businessman observers viewed the Great Depression. Romer's (1992) finding that high ex-ante real rates depressed investment and consumption in 1932 is cited.

In 2010, Romer's (1992) work experienced a noteworthy citation surge, possibly driven by a heightened focus on applying insights gleaned from the Great Depression to the 2007-2008 financial crisis. The increased interest in the Depression, sparked by the subprime crisis, is a key factor contributing to the observed peak in citations this year. Notably, some publications highlight Romer's role as the chair of the Council of Economic Advisers (CEA) at the time, suggesting that the visibility gained through years of government service may have also played a role in amplifying the impact of citation.

Mitchener & Mason (2010) discuss which policy decisions would be the most appropriate ones for the American economy to exit the 2007 crisis based on the Great Depression experience. The authors claim that the policy applications during the recovery phase of the Great Depression are still not well understood. They focus mostly on the Federal Reserve's performance and how it avoided the mistakes made in the 1930s, intervening quickly to prevent the recession from worsening once it hit in 2007. Romer (1992) is referred to when they discuss the appropriate exit policies, as she debates the monetary policy decisions that, according to her results, were essential in the Depression's exit. Almunia et al. (2010) perform a similar exercise and analyze monetary and fiscal responses employed during the 1930s as a natural experiment capable of enlightening the understanding of the policies used after 2007. The work has historical discussions but is also empirical. Romer (1992) is once again evoked in the discussion of existing policies, and her defense of the indispensability of the monetary policy in the Depression is resumed. Crafts & Fearon (2010) also derived lessons from the Depression and the 2008 Great Credit Crisis. The monetary policy's important role in the 1930s

recovery is once again the main reason Romer is mentioned. Still, this time, her position as the Chair of the CEA and prominence as a historian of economics are acknowledged.

2.4.4 The International Depression *versus* the American Depression

Hitherto, Romer has only told the story of the Depression's unfolding from the American perspective. Paying attention only to the American side of the story was the standard procedure until 1979, when Fearon's survey that treated the Depression as a global phenomenon emerged (Eichengreen, 1992, p.213).

Despite its shortcomings, this survey was a milestone in the debate about the Great Depression because it anticipated trends and inspired the subsequent analysis to treat it as a global event (Eichengreen, 1992, p.213). The shift in focus marked a noteworthy advancement as the transition to a comparative perspective significantly enhanced the capacity to pinpoint the forces behind the depression. This change increased the likelihood of steering the profession toward a consensus on the origins of the Depression, as noted by Bernanke in 1995. In her work "In The Nation in Depression" (Romer, 1993), Romer cautiously aligns with these efforts, momentarily deviating from her customary American-centric approach. However, it's worth noting that only the initial section of the article is dedicated to a comparative analysis. Most of the content is devoted to meticulously outlining each phase of the American downturn, allowing Romer to illustrate that its roots are entirely domestic.

"The Nation in Depression" functions akin to a comprehensive survey, synthesizing key insights from existing literature to elucidate the World and American economic upheaval. Rather than presenting novel discoveries or perspectives, the work engages in a broad discussion to shed light on the domestic origins of the Depression in the United States.

In the initial section, Romer (1993) conducts a comparative analysis of the spread of the Depression in the United States and 24 other countries, utilizing industrial data from the League of Nations. The examination reveals a synchronicity in the timing of the industrial production peak among the sampled nations, mostly around 1929-1931, just before the onset of the Depression. This alignment in the temporal sequence suggests a parallel occurrence of the event across these countries (Romer, 1993, p.21).

For most countries in the sample, the first year of the depression resembled a typical downturn, marked by an average output decline of nine percent. In stark contrast, the United States experienced a substantial 21% contraction in output in 1930, signifying an earlier and more severe onset of the depression in this nation (Romer, 1993, p.21). Notably, the American Depression was characterized by an initial decline in industrial production driven by a drop in consumer goods, a departure from the trend observed in most other countries where the decline was attributed to reduced investments (Romer, 1993, p.22).

Although the trough of the Depression occurred around 1932 for most countries, including the United States (Romer, 1993, p.23), the vigor of the initial recovery in 1933 highlights a faster growth rate in the U.S. than other nations (Romer, 1993, p.24).

The following sections examine the causes of the Depression in The United States. According to Romer (1993, p.26), the discussions about the causes of the American Depression are focused on explaining the collapse in aggregate demand in the late 1920s and early 1930s⁷⁵. The onset and deepening of the recession have a common cause: the stock market boom. The first fall in output in the second half of 1929 resulted from a tight monetary policy that the Federal Reserve had implemented since January 1928 (Romer, 1993, p.26).

The adoption of the tight monetary policy was a strategy aimed at controlling speculation fostered by the stock market boom⁷⁶ (Hamilton, 1987, as cited in Romer, 1993, p.26). However, it took some time for the policy to affect the money supply since banks were raising credit to attend to the increasing demand for loans to invest in stocks (Romer, 1993, p.25). The combined effect of the change in monetary policy and the demand for loans increased nominal and real interest rates, which affected the interest-rate-sensitive industries⁷⁷, leading to a decline in output that marked the start of a recession (Romer, 1993, p.28).

After its indirect impact on production, the stock market boom ended and translated into the crash of October 1929. The crash produced a sharp fall in output, and industrial production declined 37% between July 1929 and December 1930 (Romer, 1993, p.29). The mechanism by which the stock market crash affected output is previously discussed in Romer (1990) – it raised uncertainty, making consumers and producers cut their spending on durables and depressing

⁷⁵ The reason for this focus is justified because during this period, a series of adverse shocks caused aggregate demand to decline moving the economy down the supply curve to an each time lower equilibrium, which translates in a fall in output and employment.

⁷⁶ To a much smaller degree, the monetary policy was partially a response to the devaluation of the French franc that caused a gold outflow from the United States (Hamilton, 1987; Temin (1989), as cited in Romer, 1993, p.26).

⁷⁷ Automobile and construction industries for example.

aggregate demand immediately (Romer, 1993, p.31). Thus, the 1929 recession became the onset of the Great Depression after the crash, and the causes of the fall in aggregate demand in both (connected) events are now enlightened.

Now, it remains to explain the worsening of the Depression between 1930 and 1933. The source of the continuous decline in GNP in the United States until 1933 was a series of four waves of banking panic during the period. The panic caused a sequence of contractions in the money supply that further worsened the deflation, the rise in real interest rates, and the contraction in credit supply for small businesses that could not sell their stocks (Romer, 1993, p. 32).

The causes of the banking panic were the organization of American banking (focused on small and undiversified banks) and the increase in agricultural indebtedness (Bernanke & James, 1991, as cited in Romer, 1993). The recovery, as discussed in Romer (1992), resulted from an increase in the money supply due to the treasury's decision not to sterilize the gold inflow that flooded the American economy after it left the gold standard in 1933. The rise in the money supply created inflation expectations and lowered real interest rates, making interest-sensitive spending respond quickly (Romer, 1993, p.36). Once again, the decision to evaluate and increase the money supply was an answer to the American Depression, not a response to international conditions.

Based on the previous discussion, Romer (1990) sustains the narrative according to which the causes of the recession and the onset of the Great Depression are primarily domestic. External factors like the adherence to the gold standard or the shrinkage in international trade did not impact the American collapse, even though they are essential to explain the downturn in Europe and in other countries. The recovery also has domestic roots, led by internal policy decisions. Although the external scenario increased the country's gold reserves, this was not a decisive development for the recovery (p.37).

Romer (1993) has more modest numbers when compared to other papers. It has 42 citations from 1994 to 2015 distributed among 42 journals from diverse areas⁷⁸.

⁷⁸ According to the Web of Science.

Table 8 – Romer (1993) Citations per Journal

Rank	Journal	Frequency
1	JOURNAL OF MONEY CREDIT AND BANKING	5
2	EXPLORATIONS IN ECONOMIC HISTORY	3
3	JOURNAL OF ECONOMIC HISTORY	3
4	JOURNAL OF ECONOMIC DYNAMICS & CONTROL	2
5	SOUTHERN ECONOMIC JOURNAL	2
6	AMERICAN ECONOMIC REVIEW	1
7	BROOKINGS PAPERS ON ECONOMIC ACTIVITY	1
8	CANADIAN JOURNAL OF ECONOMICS	1
9	CLIOMETRICA	1
10	CONTEMPORARY EUROPEAN HISTORY	1

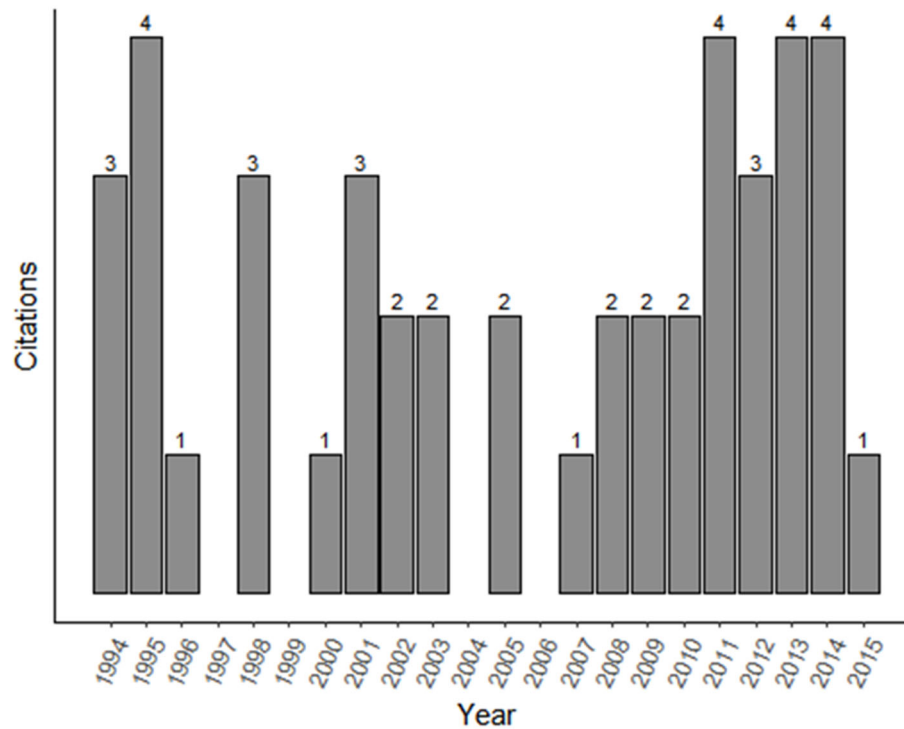
Source: Web of Science

Once again, the period in the graph is stretched after 2010 to verify if the 2007 crisis caused any changes in the paper's interest. Table 8 shows where the paper is cited more often, maintaining the usual majority of the history of economics journals at the top. Nevertheless, half of the top ten journals are not in the area of the history of economics, so the discussion reached other areas as well. This might indicate that her work is a reference.

The analysis of the papers reviews that brief citations of Romer (1993) aimed at illustrating a point prevails among them. Lindvall (2014) evaluates the effects of the massive economic downturns on the political performance of left and right-wing parties in the elections after those events.

Lindvall (2014) concludes that left-wing parties achieve better results after a crisis. Romer (1993) mentions establishing the 1929 crash as the starting point of the international crisis, a helpful supposition for the article's purposes. Ohanian (2014) debates the impact of monetary policies on big shocks. He hypothesizes that the Federal Reserve could have used a rule of monetary policy to sustain price stability after World War I, avoiding deflationary episodes and the worsening of the Great Depression. Romer (1993) illustrates an opposing view, highlighting the importance of active discretionary policy as a tool for recovery in the 1930s. Nakamura (2013) evaluates how Irving Fisher's economic methodology could help understand the 2007-2008 crisis. In this case, Romer is only referenced as a suggestion of a source that discusses the American instability.

Figure 18 – Romer (1993): Citations per year (1994-2015)



Source: Web of Science

The total of citations throughout the years is relatively constant, as shown in figure 18, totaling an average of 2,3 per year. There are no clear peaks of citations, but it is possible to notice a period of 3 almost subsequent years maintaining the peak during 2011, 2013, and 2014. This stability happens four years after the 2007-2008 crisis. Therefore, the citations are not entirely motivated by the 2007-2008 subprime crisis, and the discussion of the sample of selected papers proves this point.

2.5 Research Agenda in the 1990s and 2000s

After establishing her place in the discussion about postwar stabilization and the Great Depression in the late 1980s and early 1990s, Romer researches themes mostly related to monetary economics and business cycles. Her focus on monetary policy seems to be partly an effort to sustain that monetary policy is important and capable of affecting the real economy to sustain her findings of the recovery from the Depression⁷⁹. From 1990 to 2010, she published

⁷⁹ What ended the Great Depression (Romer, 1992) relies heavily on the argument that monetary policy matters.

29 papers in many top-tier journals. Most of them are solo works, but a few coauthored ones were fruitful since they generated some debate.

To debate Romer's research during the 1990s, it is necessary to take a step back and evaluate a paper from 1989 first. "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz" (Romer & Romer, 1989) was co-authored with her husband, David Romer.

The paper investigates if monetary policy can affect the real economy using statistical evidence complemented by what they call the "narrative approach." Friedman and Schwartz's approach inspired this method in *A Monetary History of the United States*⁸⁰; it consists of analyzing historical events to infer causality and support a theory.

The authors claim that the profession had unfairly neglected this approach since it can aid the empirical analysis by persuasively identifying the direction of the causality (Romer & Romer, p.121). The authors apply the narrative approach to the post-war era and define shock episodes in which the Federal Reserve implemented contractionary measures to reduce inflation. This definition of shock differs from Friedman and Schwartz's, allowing them to map six monetary shocks in the post-World War II period.

The next step is to verify how output behaves after the Federal Reserve tries to cause a recession. In all episodes, output fell substantially. A shift to anti-inflationary monetary policy led to an average decrease of 12% in industrial and a rise of 2% in the unemployment rate. All results are statistically significant (Romer & Romer, p.168). The disturbances caused by the contractionary measures seem persistent as output usually does not return to its pre-shock levels. Hence, monetary policy does matter, and it can impact the real economy, as maintained in Romer (Romer & Romer, 1992).

Romer returns to her saga of reviewing indexes in the coauthored work "A New Monthly Index of Industrial-Production, 1884-1940" (Romer & Miron, 1990). This time, the focus is on the pre-war period. Improving their index upon existing ones involves using consistent component series over time, avoiding proxies and ad hoc assumptions. The monthly physical output of thirteen manufacturing and mineral products is used to build the index. Nevertheless, their proposed index is more volatile than some alternative ones, like the Babson, Persons, and FRB indexes. As for the turning points, they appear to be very similar to those of

⁸⁰ Friedman and Schwartz (1963).

the aforementioned alternative indexes of production. Their new index's timing for peaks and troughs is identical to the traditional NBER reference dates during significant recessions. Still, the turning points frequently differ from the NBER dates during the more modest downturns. They suggest that this divergence with the NBER dates might change how researchers date fluctuations in output for this period since the creation of new indexes with different properties from the old ones instigates new reflections about economic performance.

In "The Cyclical Behavior of Individual Production Series, 1889-1984" (Romer, 1991), Romer claims to rescue Mitchell and Burns' (1947) tradition, that is, the use of disaggregated data to analyze short-run fluctuations. She claims that macroeconomists have forsaken this practice and replaced it with aggregate data. This paper follows the practice of her early work to contest the quality of the data being used in the macro analysis. Romer (1991) examines the short-run behavior of thirty-eight annual individual production series for 1889-1984 to compare the economy's behavior during pre-war and post-war periods again. The series is more consistent than aggregate data over time and permits comparing the volatility, co-movements, and persistence of short-run movements in the real output of individual commodities over time. The results reveal that there is not much difference in the short-run behavior of individual series between the antebellum and postwar eras. However, there has been a significant increase in volatility and co-movements of the series in the interwar period, consistent with the shock of the early 1930s. Those findings cast doubt on the efficiency of stabilization policies, confirming Romer's previous findings.

The discourse on post-war stabilization in the American economy finds synthesis in "Changes in Business Cycles: Evidence and Explanations" by Romer (1999). This study systematically assesses the role of policy in shaping the post-World War II economic landscape. The overarching finding suggests a nuanced impact: while recessions displayed a slight reduction in severity, the overall transformation in macroeconomic cycles compared to the prewar era is deemed relatively modest. Romer posits that economic policy, wielding both positive and negative consequences, catalyzes these effects.

According to Romer (1999, p.38), the virtue of economic policy, informed by updated and enhanced theories, lies in its potential to mitigate the intensity of recessions. Conversely, the downside emerges from the government's influence on postwar aggregate demand, which, as Romer contends, is a crucial factor restraining substantial changes in economic cycles (Romer, 1999, p.38).

Romer's investigation uncovers instances where policy-induced recessions were enforced to curb inflation, contributing to increased volatility in the period (Romer, 1999, p.40). Notably, four of the eight recessions identified by Romer during this period would not have occurred without government intervention. The genesis of these induced recessions lies in inflation arising from periods of overexpansion, underscoring that inflation is a central factor in the fluctuations. Consequently, Romer posits that “aggregate-demand” policy holds the potential to stabilize economic fluctuations, provided it is applied consistently.

From a forward-looking perspective, Romer reflects on a period of controlled inflation and heightened stability in the late 1980s and 1990s, contemplating the possibility of a "New Economy" where cycles become relics of the past. She suggests that achieving this paradigm shift hinges on avoiding policy mistakes. Importantly, this conclusion reinforces that Romer does not intend to cast doubt on the effectiveness of economic policy in fostering economic stability, a theme present in her earlier works. Despite having asserted this stance in the 1980s, it is worth noting that some authors tend to emphasize the perceived ineffectiveness of policy as the main corollary of her early work.

The article “Was the Federal Reserve Constrained by the Gold Standard During the Great Depression? Evidence from the 1932 Open Market Purchase Program” (Hsieh & Romer, 2006) joins the debate about whether the gold standard constrains the American economy during the Depression.

Friedman and Schwartz (1963), Bordo, Choudhri & Schwartz (2002), and also monetarists, in general, defend that the Federal Reserve was not constrained since the United States had the largest economy in the world and possessed a massive gold reserve (Bordo et al., p. 24). This interpretation is disputed by some authors like Temin, Eichengreen, and Bernanke, who claim that the choice to remain in a system with fixed exchange rates constrained the Federal Reserve since monetary expansion could lead to devaluation and loss of credibility (Hsieh & Romer, 2006, p. 141).

Hsieh and Romer used one episode when the Federal Reserve engaged in a 1 billion dollar expansionary open market operation in 1932 as a natural experiment that allowed conclusions on whether economic agents would engage in speculative behavior and whether the Reserve would lose their credibility. The empirical results, The Federal Reserve records, and the discourse of the financial press back then did not point to any evidence suggesting that

there was a fear of speculative attacks or loss of the credibility of the U.S. commitment to the gold standard (p.172). Therefore, the Federal Reserve was not constrained by the international financial system⁸¹. The authors admit it is hard to predict what could have happened. Maybe a speculative attack would occur if the Federal Reserve engaged in expansionary policies (p. 175). However, their results make them agree with Friedman and Schwartz (1963) by stating that the Federal Reserve's failure to act was a policy mistake. It was not inevitable since the Federal Reserve was not constrained by the gold standard in the 1930s.

2.6 Conclusion

This chapter has presented an overview of Christina Romer's intellectual journey, shedding light on her personal background, scholarly contributions, and enduring influence in the field of economics.

Romer's significant contributions to the field, particularly in the areas of postwar economic stabilization and the Great Depression, have been highlighted and contextualized within the broader landscape of economic discourse. Her research approach, marked by innovation and historical revisionism, has challenged established paradigms and sparked insightful debates.

Her work on postwar stabilization, driven by meticulous data analysis and methodological rigor, paved the way for new generations to reconsider the post-war stabilization debate. Despite the resistance from the already converted debaters, Romer held her ground and dominated a male-dominated debate. Her work allows for questioning the established post-war stabilization discourse, opening up the opportunity for a fresh perspective on the subject. By publishing her inquiries in top-tier journals, she reaches a wide audience and validates the quality of her critiques.

Her extensive research on the Great Depression brought fresh insights into the origins and repercussions of this pivotal historical event, enriching the body of historical and macroeconomic knowledge. Romer's contributions to understanding the Great Depression elevated her to the status of an authoritative figure on the subject. This recognition led to a noteworthy invitation from President Obama to join his administration during the subprime

⁸¹ Another reason why it was not constrained is the large gold inflow from Europe to the American economy in the 1930s.

crisis. However, skeptics questioned whether her appointment to a government position was merely a symbolic gesture in response to her gender, as highlighted in a New York Times article.⁸² This outcome underscores the unfortunate reality that, despite demonstrating her brilliance and capability, Romer was subjected to misogynistic speculations that would never be directed at a man.

Finally, this chapter underscores the importance of recognizing and celebrating the contributions of women economists like Christina Romer. It also contributes to raising awareness about the invaluable role of women in the history of economic thought, a topic deserving of greater attention and recognition in contemporary discussions.

⁸² Rampbell, Catherine (Nov. 25, 2008). The New Team: Christina D. Romer. *The New York Times*. <https://www.nytimes.com/2008/11/25/us/politics/25web-romer.html>.

3 – ELIANA CARDOSO

This final chapter provides the intellectual biography of Eliana Anastasia Cardoso. Shifting our focus to Brazilian economics, where a significant portion of her contributions lie, we follow a structure similar to previous chapters. The initial sections offer a biography and a concise bibliometric analysis of her work. Subsequently, we explore her journey from structuralist perspectives and her subsequent divergence from them while delving into her contributions to the discourse on Brazil's mega-inflation. Finally, we provide an overview of her noteworthy contributions to the broader topic of Latin America's development.

3.2 A Brief Biography

Eliana Anastasia Cardoso was born on February 28th, 1944, in Belo Horizonte, the capital of the Brazilian state of Minas Gerais. She is the second daughter of Herícilia and Mr. "Toinzinho," who had six children. Her father was an auto parts store proprietor and engaged in hobby farming. Her mother, Herícilia, possessed a strong penchant for reading and instilled this habit in her children while actively encouraging their pursuit of education. Her effort bore fruit as her offspring secured a college education⁸³—an opportunity she did not have.

Growing up, Cardoso was raised in a high-medium-class household. She attended the traditional Catholic girls' school, Nossa Senhora do Sion during her secondary education. Notably, Sion was renowned for its educational standards and was a preferred choice among parents who could afford a superior quality education for their children (Azevedo, 2010). The school's curriculum extended beyond conventional subjects to encompass additional offerings such as French, English, Latin, embroidery, and knitting. Furthermore, it incorporated teachings to instill traditional values into its students⁸⁴ (Azevedo, 2010). Interestingly, among the notable alumni of Nossa Senhora do Sion are Eliana Cardoso and Dilma Rouseff, Brazil's former

⁸³ Cardoso's siblings in descending order of age: Marco Antônio Anastasia Cardoso (architect), Eliana Cardoso (economist, currently writer and illustrator), Ângela Lago (award-winning writer and illustrator), Sônia Saraiva (known ceramist, Rio de Janeiro), Olga Regina Cardoso (sculptor), and Cláudia Cardoso-Martins (PhD in psychology, former director of the psychology department at UFMG, Belo Horizonte).

⁸⁴ They were encouraged to get married and not to pursue a career of their own, but to get at most a degree as a teacher.

president. Both women defied the conventional gender roles of the 1950s that the school sought to inculcate in its students, charting their own unique paths in society.

During her high school years, Eliana Cardoso attended Helena Guerra State School, a public institution in the expansive Belo Horizonte metropolitan area. Upon completing her high school education, Eliana Cardoso's attention became focused on the glaring societal inequalities pervasive throughout Brazil. Consequently, she enrolled in the social service program at the Federal University of Minas Gerais (UFMG).

After a couple of years, Eliana Cardoso struggled with intellectual dissatisfaction. The practical experiences garnered during her internships revealed the inherent limitations of the social service field. Consequently, she decided to discontinue her pursuit of social service to study economics, a decision marking a departure from the path often followed by women in the post-World War II era, as previously discussed.

In 1968, Eliana Cardoso embarked on a significant transition by enrolling in the economics program at UFMG, where she received a scholarship. This period also saw her balancing the demands of motherhood, as she had a four-year-old son named Sérgio with academic commitments. Her journey continued as Cardoso relocated to Rio de Janeiro in 1970 and completed the Pontifical Catholic University (PUC – Rio) economics program in 1972. At PUC, she had the privilege of assisting Professor Sérgio Góes de Paula and was responsible for conducting some classes under his mentorship. This teaching experience sparked her interest in pursuing an academic career.

A pivotal moment in her academic trajectory occurred when Cardoso learned about the inception of a Master's program at the University of Brasília (UnB). Fueled by enthusiasm, she promptly applied and secured admission. In 1973, Eliana Cardoso embarked on her master's journey at UnB. During the second year of her master's program, she attended the lectures of Professor Lance Taylor, who was visiting from the Massachusetts Institute of Technology (MIT). This encounter led to him becoming her advisor. This period marked a significant phase for the social sciences academia in Brazil, as the establishment of graduate programs in the country, including the one at the University of Brasília, was a result of collaborations between the Brazilian Ministry of Education and Culture (MEC) and the United States Agency for International Development (USAID). Those collaborations have evolved since the 1960s (Suprinyak & Fernández, 2018).

The goal of such agreements was to develop the social sciences in Brazil. In the case of economics, the Ford Foundation was especially relevant, providing funding for the creation of the first graduate programs in the field in Brazil (Suprinyak & Fernández, 2018). This funding was essential because it allowed an exchange of people and knowledge between Brazilian and American academia. During the financing period, American Professors came to Brazilian Universities to help establish graduation courses and form a new generation of researchers (Suprinyak & Fernández, 2018). As a counterpart, newly graduated students from Brazil pursued their doctorates at the top-tier universities in the United States, returning later to teach at Brazilian universities or work for government agencies (Suprinyak & Fernández, 2018).

Under Taylor's mentorship, Cardoso wrote her dissertation in macroeconomics titled *Crescimento, Distribuição e Balanço de Pagamentos: Algumas Simulações para o Brasil* (Growth, Distribution, and Balance of Payments: a few simulations for Brazil). The dissertation yielded the article "Identity-Based Planning of Prices and Quantities: Cambridge and Neoclassical Models for Brazil" (Cardoso & Taylor 1979), published in the Journal of Policy Modeling with Taylor as a co-author.

When Eliana Cardoso decided to pursue a Ph.D. and further her academic career, Lance Taylor suggested that she should consider applying for a Ph.D. program abroad. Considering this advice, Cardoso embarked on the Cambridge University and MIT application process. Remarkably, she received acceptance letters from both institutions but ultimately opted to enroll at MIT. Cardoso completed her master's program in 1975 and moved to Cambridge, Massachusetts. Accompanied by her partner at the time, Edmar Bacha, and her 11-year-old son, Sérgio, they secured an apartment near Harvard University. In the same year, Cardoso commenced her doctoral studies at MIT. Sérgio was enrolled at the Peabody School, where he would spend his days from 7 a.m. until 3 p.m. This arrangement allowed Cardoso the necessary time and flexibility to fulfill her Ph.D. program requirements. Cardoso obtained a scholarship from CAPES⁸⁵ (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*) during her Ph.D. so she could be fully dedicated to her doctorate.

⁸⁵ In English it translates literally as - Higher Education Personnel Improvement Coordination. It is a foundation that is part of the Ministry of Education in Brazil and is responsible for funding and expanding graduate courses in Brazil

Cardoso's Ph.D. class had more or less 20 students, only three women, herself included⁸⁶. Despite the challenges of studying in a foreign country, navigating a foreign language, and being a female scholar in a predominantly male environment, the MIT experience was not intimidating for Cardoso. She fondly recalls the Economics department's warm reception and the generally progressive atmosphere of the U.S. East Coast, which made her gender feel far from a hindrance (Torri, 2021).

Cardoso's enduring interest in macroeconomics, dating back to her undergraduate years, remained a driving force throughout her academic journey. Both her Master's dissertation and Ph.D. thesis centered on this area of study. During her time at MIT, she had the privilege of working under the guidance of Rudi Dornbusch, whose intelligence, acute sense of humor, and intuitive approach to economics left a lasting impression. Cardoso served as Dornbusch's teaching assistant⁸⁷ in an undergraduate course and developed a deep fascination with his recurring research themes, which included the macroeconomics of open economies, the role of exchange rates in economic functioning, and inflation dynamics. These interests prompted Cardoso to seek Dornbusch's mentorship as she aspired to explore these themes in the context of Brazil. Thus, the concept of composing three analytical essays emerged, ultimately converging into her doctoral thesis titled "Inflation, Growth, and the Real Exchange Rate: Essays on Economic History in Brazil and Latin America." Subsequently, these essays were published as articles in academic journals⁸⁸ and collectively as a book⁸⁹. Cardoso and Dornbusch eventually married and moved into a lovely suburban house on Follen Street, Cambridge, MA, with a beautiful garden. Their marriage endured until 1993.

Eliana Cardoso completed her Ph.D. in 1979. Subsequently, in 1981, she assumed the role of an Assistant Professor at Boston University, where she taught classes to graduate students in the fields of International Economics, Macroeconomics, and Monetary Policy⁹⁰.

⁸⁶ Among her class mates were Ben Bernanke (chairman of the Federal Reserve from 2006 to 2014), Ken Rogoff (IMF chief economist from 2001-2003) and Larry Summers (Secretary of the treasury) who was at Harvard but joined some classes at the MIT as a visiting student.

⁸⁷ At the same time her colleague Pedro Aspen (who would later become Mexico's minister of finance) was also Dornbusch's assistant.

⁸⁸ The Book is Cardoso, E. (1987). *Inflation, Growth, and the Real Exchange Rate: Essays on Economic History in Brazil and Latin America, 1850-1983*. Garland. The papers are part of the work Cardoso, E. A., & Dornbusch, R. (1980). *Three Papers on Brazilian Trade and Payments* (NBER Working Paper Series, Working Paper No. 541). National Bureau of Economic Research

⁸⁹ (Cardoso, Eliana 1987. *Inflation, Growth and the Real Exchange Rate: Essays on Economic History in Brazil and Latin America*, Garland Publishing Inc., New York).

⁹⁰ Most of the information regarding her jobs were either obtained from Cardoso's Curriculum Vitae accessed on September 7th 2023 (available at: <http://lattes.cnpq.br/8833194579874813>), or from the interview she provided by e-mail to the author on August 30th, 2023. Any other sources used are properly referenced throughout the text.

Cardoso remained an academic fixture at Boston University until 1984. In 1985, she temporarily joined Yale University as a visiting professor for six months, where she conducted a course focused on Latin America's Economy for graduate students (January 1985 - June 1985).

In August 1985, Cardoso transitioned to the faculty of Tufts University's Fletcher School of Law and Diplomacy. Her dedication and contributions led to her tenure in 1991 and the William Clayton Professor of International Affairs chair in 1993. During her tenure at Tufts, she taught a range of subjects, including Macroeconomics, International Economy, International Finance, and Latin America's Economy, to graduate students in Law and Diplomacy. Additionally, from February to July of 1988, she assumed the role of a visiting Professor at MIT, where she delivered lectures on Development Economics.

Throughout her tenure at Tufts, Cardoso forged a significant professional relationship with Ann Helwege, a fellow academic with a shared interest in Latin American studies. Helwege, a Professor in the Economics Department at Tufts, specialized in Economic Development, focusing on Latin American issues, aligning closely with Cardoso's expertise. Their connection transcended the professional realm, as they became close friends and even ventured on occasional trips to Stow - Massachusetts, where they enjoyed swimming at the White Pond. Recognizing a gap in the market for a comprehensive textbook on Latin America, and with MIT Press expressing interest, they embarked on a collaborative endeavor. This collaboration culminated in creating "Latin America's Economy: Diversity, Trends, and Conflicts" (Cardoso & Helwege, 1992), a successful textbook that garnered considerable acclaim, with 90,000 copies sold. However, the book is no longer in circulation as it has not been updated since its initial publication⁹¹.

Eliana Cardoso's departure from Tufts University in 1993 marked a temporary hiatus from teaching. She relocated from Cambridge, MA, to Washington, D.C., where she started a new job at the International Bank for Reconstruction and Development, part of the World Bank, in August of the same year. Her position as a lead economist involved researching the development dynamics of China and Mongolia. Notably, this career shift coincided with her divorce from Rudi Dornbusch, a figure she regarded as the love of her life. In retrospect,

⁹¹ Later Ann and Cardoso received an invitation from Cuba to do a consultancy and that visit resulted in the co-authorship of another book, also published by MIT Press: Cuba after Communism (Cardoso, Helwege 1992).

Cardoso claims she found solace in the newfound autonomy she had attained during this phase of her life.

In August of 1995, Cardoso embarked on a new professional journey by joining the Ministério da Fazenda (Ministry of Finance) in Brazil. Within the ministry, she was a member of the international affairs department. Notably, the Minister of Finance at that time, Pedro Malan, had been a member of Cardoso's master's committee during her academic pursuits. Over time, they forged a friendship. Cardoso viewed her government position as a unique opportunity to contribute to sound economic policies. Her collaboration with Pedro Malan and President Fernando Henrique Cardoso, whom she described as "intelligent, educated, honest men who wish the country well," held great promise. However, as time progressed, Cardoso's enthusiasm waned. Her impatience and disagreements over the exchange rate policy led to a decision to step down in 1996. Despite the challenges encountered during her time in public service, Cardoso's experience living in Brazil after many years abroad prompted her to contemplate the possibility of returning to her homeland shortly (Cardoso, 2022).

Cardoso embraced a new professional opportunity after she departed from government service. She accepted a position in the International Monetary Fund (IMF) research department, working alongside Michael Mussa as his advisor. This position allowed her to make a significant scholarly contribution. Notably, one of her most widely cited articles, "Capital Flows to Brazil: The Endogeneity of Capital Controls" (Cardoso & Goldfajn, 1998), emerged from her tenure at the IMF. This collaborative work included Ilan Goldfajn, another esteemed Brazilian economist, a former MIT student, and also an advisee of Rudi Dornbusch.

In 1998, Eliana Cardoso's professional trajectory led her back to the International Bank for Reconstruction and Development. During this second tenure, which lasted until 2000, she assumed the role of Sector Manager. Her research focused on issues of poverty and distribution in Latin America and the Caribbean.

Subsequently, from 2000 to 2001, Eliana Cardoso embarked on a venture with the Egyptian Center for Economic Studies. Her mission was to investigate monetary policy and exchange rate regime alternatives for the Middle East. In 2000⁹², she also started writing a column for the economics-specialized magazine *Valor Econômico*. Initially, the column

⁹² Cardoso was a member of the executive committee of the International Economic Association from 2000-2002 and had the same position at the Latin American and Caribbean Economic Association from 2000-2003. From 2000-2004 she was a member of the international council at Notre-Dame University – Kellogg Institute.

approached the economics debate, but later, it became dedicated to literature and played an essential role later in her career's "rebranding."

In 2002, Cardoso resumed her role as an educator in economics following a sabbatical period lasting nearly a decade. That year, she undertook the role of a part-time professor at Georgetown University, where she imparted instruction on the subject of Latin America's Economy. Subsequently, from July 2003 through December of the same year, Cardoso served as a visiting professor at the University of São Paulo, where she delivered lectures on the Brazilian Economy to graduate-level students.

In 2004, she was offered the esteemed position of *Professora Titular*⁹³ at *Fundação Getúlio Vargas*⁹⁴ (FGV). The offer, made by Marcio Nakane, the director of the Economics Department, was irresistible (Cardoso, 2022). It was her chance to establish a permanent residence in São Paulo, closer to her son and grandchildren (Cardoso, 2022). Consequently, she accepted the offered position. Cardoso's tenure at FGV continued until December 2013, representing her lengthiest tenure in any professional role. During her tenure at FGV, she delivered coursework on Introduction to Economics to undergraduate students and instructed graduate students on the Brazilian Economy. Cardoso's decision to step away from the academic sphere was motivated by a sense that her tools were no longer as sharp (Cardoso, 2022). As a result, she opted to embark on a new pursuit, channeling her energies into her newfound passion: writing.

Eliana Cardoso's writing journey has been marked by notable accomplishments and a remarkable dedication to her new job. In 2014, she made her literary debut with the novel "Bonecas Russas," a work that showcased her storytelling skills and earned her a nomination for the award *Prêmio São Paulo de Literatura* (Torri, 2021). The second book, "Nuvem Negra," came out only two years later in 2016. Beyond her novels, Cardoso ventured into the world of literary criticism. The following year, she reunited her articles written for the magazine *Valor Econômico* in the book "Sopro na Aragem" (Torri, 2021). In 2018, Cardoso went beyond traditional publishing avenues. The novel "Damas de Paus" was first published online and awarded a *Prêmio Kindle de Literatura* (Torri, 2021).

⁹³ Akin to tenure in the U.S.

⁹⁴ Getúlio Vargas Foundation

Refusing to rest on her laurels, Eliana Cardoso embarked on a new chapter in her creative journey—illustrating and writing children's books. This transition allowed her to rediscover a long-standing passion for photography. While living abroad, Cardoso took a photography course. During her doctorate years, Cardoso went to the nearest darkroom to practice his hobby of developing photos whenever she had free time. Transforming this passion into a profession, Cardoso's work as an illustrator breathed new life into her career, enabling her to engage with a younger audience and explore new artistic dimensions.

In light of her remarkable journey and enduring passion for intellectual pursuits, it is evident that Eliana Cardoso has no retirement on the horizon. Her ability to reinvent herself professionally, not once but twice, in less than ten years, emphasizes her solid commitment to lifelong learning and creative exploration. Furthermore, her continued engagement in scholarly activities, including the occasional publication of articles, with her most recent work dating from 2021, is a testament to her enduring curiosity and dedication to making meaningful contributions to her fields of interest. Eliana Cardoso's journey is an inspiring example of how a lifelong pursuit of knowledge and a willingness to embrace new challenges can lead to a fulfilling and impactful career that knows no bounds of age.

Turning our attention to an analysis of her intellectual contributions, Eliana Cardoso's initial incursion into academic publishing occurred in 1974 with the release of her debut article titled "Minidesvalorizações e indexação salarial: alguns aspectos da experiência brasileira na década de 70" (Cardoso, 1974). This milestone marked the inception of an extraordinarily productive academic career spanning several decades. As evidenced by data from the Google Scholar database, Cardoso has accumulated an impressive total of 188 scholarly publications⁹⁵ until her most recent one in 2021. Table 1 depicts her most highly referenced works, and the book "Latin America's Economy: Diversity, Trends, and Conflicts" (Cardoso & Helwege, 1992)⁹⁶ figures first. The textbook provides a comprehensive analysis of the historical development of Latin American economies and assesses the evolution of macroeconomic

⁹⁵ The Google Scholar database has 232 entries for Eliana Cardoso's work, but this value is incorrect as figures are inflated by double entries of the same work and considering the work of a different researcher with the same name.

⁹⁶ Cardoso, E., & Helwege, A. (1992). *Latin America's Economy: Diversity, Trends, and Conflicts*. MIT Press. The book *Latin America's Economy: Diversity, trends, and conflicts* coauthored by Ann Helwege has 483 citations in total, but they are split between the years of 1992 and 1995 in the Google Scholar database. The year of 1992 has 120 citations and corresponds to the copyright year, and it is also the year that appears attached to its Library of Congress Classification. 1995 is the first MIT Press paperback edition. Different authors who cite this work choose different dates to cite it, but for the purposes of this analysis they were combined together.

indicators over time. It was written in collaboration with Ann Helwege while both authors worked at Tufts University.

Table 9 – Cardoso’s most cited work

Rank	Citations	Title	Authors	Source	Year
1	483	Latin America’s economy: Diversity, trends, and conflicts	E Cardoso, A Helwege	MIT Press	1992
2	380	Capital flows to Brazil: the endogeneity of capital controls	E Cardoso, I Goldfajn	IMF Staff Papers	1998
2	380	The impact of cash transfers on child labor and school attendance in Brazil	E Cardoso, AP Souza	Working paper Vanderbilt University	2004
3	299	Inflation and poverty	E Cardoso	National Bureau of Economic Research	1992
4	235	Models of growth and distribution for Brazil	L Taylor, EL Bacha, E Cardoso, FJ Lysy	The World Bank	1980
5	175	Foreign private capital flows	E Cardoso, R Dornbusch	Handbook of development economics	1989
6	156	Latin American economic development: 1950–1980	E Cardoso, A Fishlow	Journal of Latin American Studies	1992
7	153	Food supply and inflation	E Cardoso	Journal of Development Economics	1981
8	137	Private Investment in Latin America	E Cardoso	Economic Development and Cultural Change	1993
9	126	Inflation and unemployment as determinants of inequality in Brazil: the 1980s	E Cardoso, A Urani	Reform, recovery, and growth Latin America and the Middle East	1995

Source: Google Scholar

"Capital Flows to Brazil: The Endogeneity of Capital Controls"⁹⁷ (Cardoso & Goldfajn, 1998) and "The Impact of Cash Transfers on Child Labor and School Attendance in Brazil" (Cardoso, Souza 2004)⁹⁸ come in second place. "Capital Flows" was made during her tenure as an IMF staff member and is co-authored with her compatriot colleague, Ilan Goldfajn. The second article assesses the impact of conditional cash payments to impoverished families in Brazil on school attendance and child labor, outlining Brazil's transfer programs and providing data on school attendance and child labor rates.

Noticeably, in Table 9, the majority of her most highly cited works were published during the 1990s in a wide range of sources. Another noteworthy characteristic is co-authorship

⁹⁷ Cardoso, E., & Goldfajn, I. (1998). Capital Flows to Brazil: The Endogeneity of Capital Controls. IMF Staff Papers, 45(1), 161-202.

⁹⁸ Cardoso, E., & Portela Souza, A. (2004). The Impact of Cash Transfers on Child Labor and School Attendance in Brazil (Vanderbilt University Department of Economics Working Papers No. 0407). The citations to the paper were added to the citations of the book chapter, since they are the same.

prevalence, accounting for 7 out of her top 10 publications. Table 10 confirms this trend and shows her coauthorship net. Cardoso engaged in 16 collaborations throughout her career within the timeframe of relevance for this chapter, spanning from 1974 to 2010. Among her most frequent collaborators were Rudiger Dornbusch, her thesis advisor; Albert Fishlow, a former MIT Professor; Ann Helwege, her colleague from Tufts University; and Lance Taylor, her master's advisor.

Table 10 - Coauthorships

index	Coauthors	Collaborations
1	Dornbusch, R.	10
2	Fishlow, A.	10
3	Helwege, A.	7
4	Taylor, L.	4
5	Galal, A.	2
6	Velloso, R. W.	1
7	Souza, A. P.	1
8	Urani, A.	1
9	Goldfajn, I.	1
10	Holland, M.	1
11	Burki, S.J.	1
12	Yusuf, S.	1
13	Teles, V.K.	1
14	Resende, A.L.	1
15	Reis, E.J.	1
16	Alvarichesky, J.	1

Source: Google Scholar

Figure 19 illustrates the annual distribution of total publications, totaling 185 over the specified period. For analytical purposes in this chapter, Cardoso's career has been divided into four phases based on the previously described professional trajectory.

This division aptly aligns with the discernible patterns evident in Cardoso's career trajectory, as corroborated by the accompanying graphs and statistical data. The breakdown is as follows:

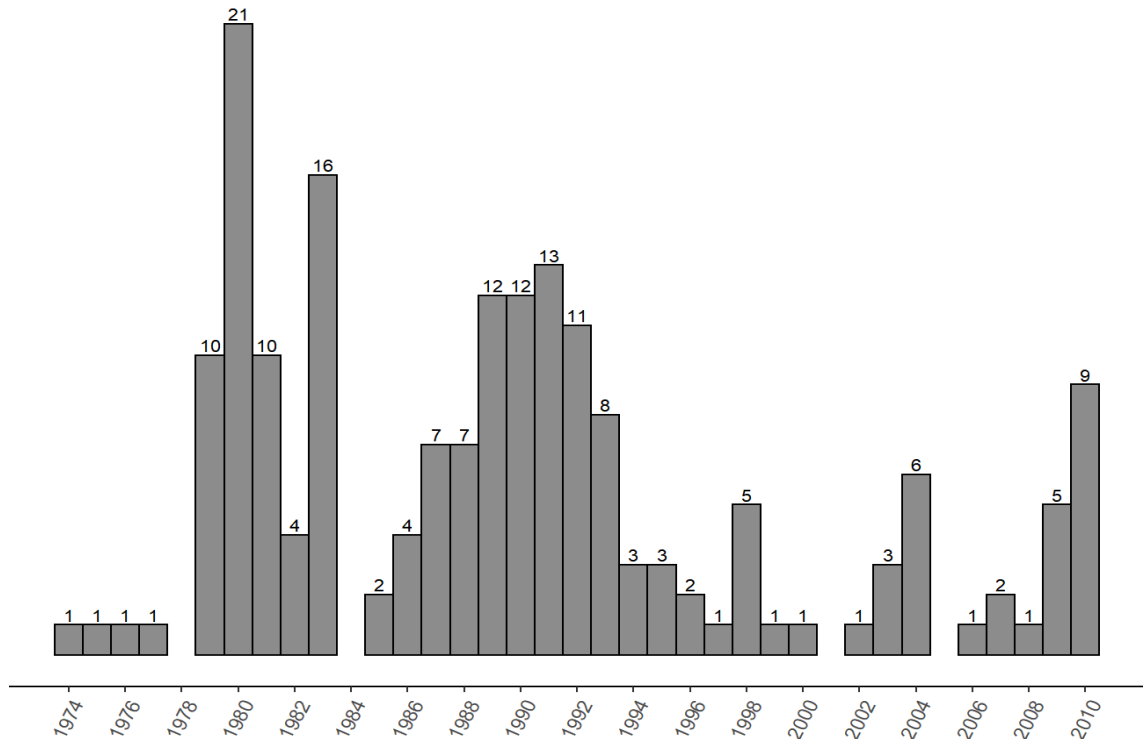
- 1- Early Career (1974-1980): This period encompasses the culmination of her master's degree, her entire doctoral journey, and the phase preceding her commencement as a university professor.
- 2- Academic Years (1981-1993): This phase represents her tenure as a university lecturer, during which she actively taught and conducted research.
- 3- Hiatus from Academia (1994-2001): Cardoso temporarily withdrew from teaching at universities to engage in various other activities, primarily in the capacity of a researcher.
- 4- Return to University (2002-2010): The final segment of this analysis marks Cardoso's return to the classroom, a period that persisted until she retired from the academic profession in 2013.

The present data analysis offers valuable insights into Eliana Cardoso's longitudinal publication productivity. It elucidates periods marked by heightened research output and intervals characterized by fewer publications. Overall, she had a consistent production during her Ph.D. years, followed by a highly productive period as a university professor, a slowdown during her hiatus from teaching, and a resurgence in her research output upon returning to academia. More details on the critical trends of her body of work will be presented in the subsequent pages.

Early Career (1974-1980): In the initial phase of Eliana Cardoso's career, a steady pace of one work per year was maintained until 1977, except for 1978, when no publications came out. However, a remarkable surge of ten publications occurred in 1979, coinciding with the year she earned her Ph.D., and peaked in 1980 with 21 journals. Altogether, 35 publications were produced during this period, equivalent to 18.9%. The annual average of publications is five titles per year. Notably, the slower pace of publications until 1978 aligns with her doctoral

studies, which took place from 1975 to 1978⁹⁹. During her Ph.D. years, Eliana Cardoso demonstrated a relatively modest yet consistent publication output.

Figure 19 – Total of Publications per Year



Source: Google Scholar

Academic years (1981 –1993): During her tenure as a university professor, Eliana Cardoso's publication output increased significantly and was the most prolific of her career. She produced a substantial number of 127 new titles, or 68.64% of her total publications, with an annual average of 9,77 during this academic phase. The most notable peaks were 1983 (16 titles) and 1991 (13 titles). This is the period when she produced her most cited academic work.

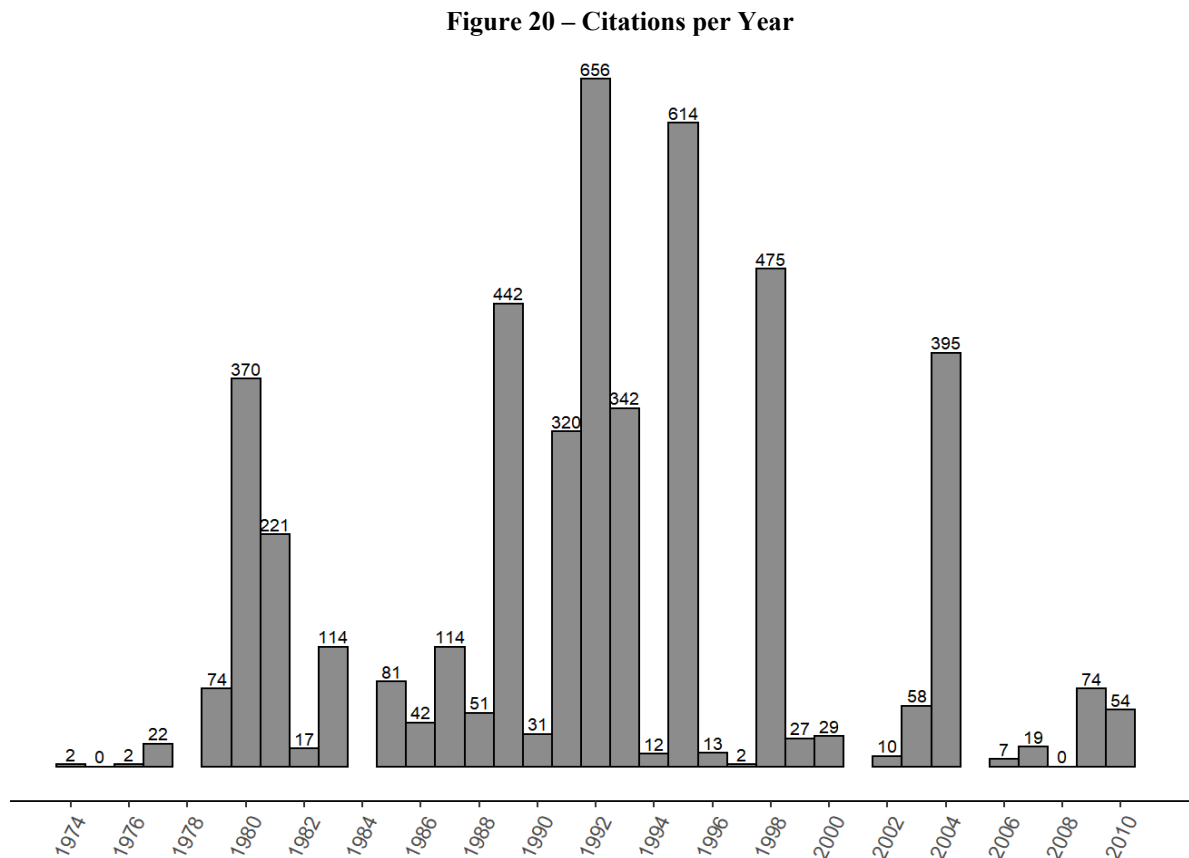
Hiatus from University (1994 – 2001): During this hiatus from the university, there was a noticeable decline in Eliana Cardoso's publication output compared to her teaching years. She published a total of 16 new titles during this period, accounting for approximately 8.65% of her overall publications. Her average output during this time was two titles per year. An interesting

⁹⁹ Her curriculum specifies that the Doctorate period was from 1975-1978 and she obtained her Ph.D. in 1979.

point to highlight is that the most productive year during this hiatus period was 1998, with five articles resulting from her research while serving as IMF staff.

Return to teaching (2002 – 2010): Upon returning to university teaching, Cardoso's publication output increased, with a notable peak in 2010 (9 titles). Within this period, she fashioned 28 new publications, equivalent to 15,36% of the total, with an annual average of 3,1. Her return to academia was marked by renewed research activity and a relatively higher number of publications compared to the hiatus period.

Figure 20 shows the number of citations received by works published in each respective year. There are 4690 citations to Cardoso's work throughout the period.



Source: Google Scholar

A noteworthy trend during Cardoso's early career(1974 – 1980) was the subdued citation count from 1974 to 1978, when her work garnered relatively modest attention with 26 cites. However, a significant turning point emerged in 1979, coinciding with the completion of

her Ph.D. This pivotal year witnessed a remarkable upsurge in citation numbers, with figures soaring from 22 citations in 1977 to 74 in 1979, peaking at an impressive amount of 370 in 1980. This shift can be attributed to the culmination and publication of multiple research projects in 1979 and 1980 (as shown in Figure), potentially amplifying the visibility of her contributions and elevating the citation count. The entire period accounts for 470 citations, or 10,02%, the lowest of her career. Hence, during her Ph.D. period, citation numbers were lower due to the limited volume of publications and her emerging academic presence.

Two seminal works, namely "Inflation, growth and the real exchange rate: essays on economic history in Brazil" (Cardoso, 1979) and "Oferta de alimentos e inflação" (Cardoso, 1979), each with 19 citations, stand out as the most referenced publications of that year. This early emphasis on inflation as a thematic focal point indicates its enduring prominence in Cardoso's work.

There was a rise in the impact of citations in her academic period (1981-1993). It was the most fruitful period regarding mentions of her work. This period aligns with her prolific publication output, suggesting a correlation between research productivity and citation impact. Citations reached a peak in 1992, totaling 656, led by the NBER paper "Inflation and Poverty" (Cardoso, 1992) with 299 mentions and "Latin American Economic Development: 1950–1980" (Cardoso, 1992) with 156 cites. The sustained boos in the citation count during her teaching years indicates a broader recognition of her work within the academic community. The period accounts for over half of overall citations, totaling 2431 mentions or 51,83%.

Citations experienced a decline during Eliana Cardoso's hiatus from academia, spanning from 1994 to 2001, compared to her teaching years. Notably, there was a pronounced decrease in 1994 and 1995, which coincided with a reduction in her publication activity. Despite the overall lower number of citations during this period, the attention that her work received was still impressive, occasioning citation peaks. For instance, publications of 1995 garnered 614 citations, primarily attributed to the book "Latin America's Economy: Diversity, Trends, and Conflicts" (Cardoso & Helwege, 1995), with 483 citations. Another notable citation peak occurred in 1998, possibly influenced by her role as the International Monetary Fund (IMF) member. The most cited works produced that year included "Capital Flows to Brazil: The Endogeneity of Capital Controls" (Cardoso & Goldfajn, 1998) with 380 citations and "Virtual Deficits and the Patinkin Effect" (Cardoso, 1998), accruing 94 citations. The period accounts

for 1.172 sources or 24.99%, the second highest of her career. This is an impressive outcome, considering this period had the lowest production output.

Upon returning to teaching, there was a resurgence in citation numbers, with notable peaks in 2003 (58 citations), 2004 (395 citations), and 2009 (74 citations). In 2004, the most mentioned paper was “The Impact of Cash Transfers on Child Labor and School Attendance in Brazil” (Cardoso & Souza, 2004), with 381 citations just on its own. The return to teaching in universities brought renewed research activity and increased citations, highlighting the importance of sustained research output. These peaks suggest her work resonated with the academic community after her hiatus. The period represents 617 citations, or 13,16%.

Building upon the insights gleaned from the prior analysis of cited works and the titles of Eliana Cardoso's publications, it becomes evident that her research expertise predominantly revolves around pivotal subjects, notably Brazilian Inflation, the Economic History of Brazil, and the Development of Latin America. While International Finance and Capital Flows and Social and Labor Economics occupy somewhat lesser prominence in her body of work, they too bear significance within her academic agenda. Cardoso's ability to transition between these themes throughout her career underscores her versatility and the broad impact of her contributions to the field of economics.

Having conducted a comprehensive bibliometric analysis of Eliana Cardoso's career, shedding light on the trends in her publications and citations over the years, the following sections will be dedicated to a deeper exploration of the substance and impact of her research. The remainder of the chapter will delve into the key themes of Cardoso's seminal works and their influence on the Brazilian and international economic debate.

3.3 Eliana Cardoso's place in the Brazilian inflation debate

This section elaborates on the contributions of Eliana Cardoso to the understanding of inflation, providing a contextual backdrop to her work within the Brazilian inflation landscape. In her early career, Cardoso was immersed in the ongoing debate between monetarist and structuralist approaches to inflation in Brazil. Her early work was aligned with a heterodox perspective. Namely, the Brazilian neo-structuralist tradition is predominantly represented by scholars from PUC-Rio. This tradition aimed to challenge monetarist interpretations of the Brazilian economy and the neo-Keynesian/Kaleckian theories, as evidenced by her dissertation.

Neo-structuralism is a non-conventional approach to economic development that emerged in Latin America during the 1980s (Ffrench-Davis & Torres, 2021). It evolved in response to significant global changes such as the Debt Crisis, the widespread adoption of neoliberal economic policies, and the increasing influence of financial globalization (Ffrench-Davis & Torres, 2021). Neo-structuralism is a contemporary reinterpretation of the Economic Commission for Latin America and the Caribbean's (ECLAC) Structuralist approach to development (Ffrench-Davis & Torres, 2021).

During this period, Cardoso's mentorship under Taylor's guidance is discernible in her work and in the research of other young Brazilian academics who were part of the neo-structuralist circle challenging monetarist views. This group would later establish the graduate course in economics at PUC – Rio (Carvalho, 2016, p.107). Notable economists included André Lara-Resende, Edmar Bacha, Francisco Lopes, and Pérsio Arida, to name a few. Their collective influence extended beyond academic debates, as their work contributed to the formulation of significant stabilization programs in Brazil. For instance, Chico Lopes played a pivotal role in devising the Cruzado plan, while Pérsio Arida and Lara-Resende laid the groundwork for the 1994 Real Plan through their Larida Proposal.

Neo-structuralist analysis differs from earlier structuralist approaches in its preference for mathematical and mechanistic models addressing the relationship between economic development and inflation (Carvalho, 2015, p. 128). Neo-structuralists shifted their focus towards examining the mechanisms responsible for driving inflation (Carvalho, 2015, p. 128). A prominent feature of this shift was the recognition of indexation as the key inflation-propagating mechanism, which became the defining factor in Brazil's experience with inflation, contrasting with the structuralist models of the first generation that emphasized structural and historical factors (Carvalho, 2015, p. 128).

Simonsen's feedback model influenced the PUC-Rio economists' approach to inflation (Serrano, 2010). As will be discussed in the next section, the authors highlight the role of inertia that comes from the indexation of wages and contracts as the feedback component that perpetrates inflation. Therefore, the economists from PUC-Rio will also be called “inertialists”. This framework was coined as a reaction to the 1980s and early 1990s Brazilian mega inflation.

The wage policy that the neo-structuralists extensively investigated was implemented when the authoritarian regimen of the military dictatorship took place in Brazil in 1964 as part of the PAEG (Plano de Ação Econômica do Governo - Government Economic Action Plan).

Initially, the wage policy of the wage policy aimed to maintain the participation of wage earners in the national product, prevent disorganized wage adjustments from perpetuating the inflationary process irreversibly, and correct wage distortions, particularly in the Federal Public Service, Autarchies, and Mixed-Economy Enterprises (Resende, 1982, p. 776).

However, the PAEG's disinflationary program replaced wage negotiations with an official adjustment formula, which reduced the minimum wage each year from 1965 to 1974, while the average real industrial salary fell by 10 to 15% between 1965 and 1967, depending on the deflator used (Resende, 1982, p. 802). This occurred because, in June 1968, Law No. 5,451 altered the wage formula in such a way that if the inflationary residue had been underestimated in the last 12 months, for calculation purposes, the real wage for those previous 12 months would be computed not at its actual level but at what would have prevailed if the inflationary residue had been correctly estimated following the cost of living increase. This mechanism of automatic wage correction based on inflation is known as wage indexation (Resende, 1982, p. 448). Therefore, the indexation was institutionalized through the wage policy rule.

The PAEG successfully stabilized the inflation inherited by previous economic plans and provided a stable economic environment, setting the ground for the Brazilian “Miracle” (Franco, 2004, p.8)¹⁰⁰. The "Brazilian Economic Miracle" was a period of accelerated economic growth in Brazil between 1968 and 1973 during the military regime. During this time, the Brazilian GDP grew at an average annual rate of approximately 11.1%, compared to the previous period (1964-1967), with a growth rate of 4.2% per year. Additionally, this period was characterized by declining and relatively low inflation rates by Brazilian standards and surpluses in the balance of payments (Velo, Villela & Giambiagi, 2008). The end of the “miracle” is multifaceted and has sparked a discussion in the economic literature, but it can be narrowed down to some key factors. These include the oil shock, the scarcity of foreign financing, and the excessive indebtedness are some of the elements¹⁰¹.

The end of the miracle coincides with the beginning of mega inflation. The successive external supply shocks that began in 1973 rendered the previously effective growth formulas

¹⁰⁰ The literature on the miracle is vast since it is an object of extensive investigation. Many studies also highlight the importance of a favorable external scenario in the Brazilian miracle. For more details, see Veloso, Villela & Giambiagi (2008).

¹⁰¹ This statement was based on the views of Franco (2004) and Moura, A.R. (1978). Crise do petróleo e o fim do milagre - uma nota. *Revista de Administração de Empresas*, 18(1), 72-74.

ineffective, leading to nothing but an acceleration of inflation to unprecedented and unsettling levels (Franco, 2004, p.9). The conventional wisdom regarding economic policy proved inadequate in providing solutions to these unusual circumstances, including supply shocks, exogenous changes in relative prices, and fiscal exhaustion, which appeared incomprehensible (Franco, 2004, p.9).

Brazilian economists tried to provide a personalized explanation of Brazilian inflation to bridge this intellectual gap generated by this adverse economic scenario. Neo-structuralists and Eliana Cardoso are examples of this effort. Cardoso began publishing more consistently right after the second oil crisis hit, and Brazil entered a phase of persistently high inflation. Despite residing abroad throughout the hyperinflation era, she closely monitored and actively contributed to the discussion regarding Brazilian inflation. In the subsequent section, we will delve into her perspective on inflation and juxtapose it with the views of the neostructuralists. This examination will shed light on her gradual departure from neostructuralism. In essence, this is the central contribution of this chapter and constitutes an attempt to make a meaningful contribution to enlarging the debate on the contribution of women to the history of ideas.

3.3.1 Cardoso's structuralist perspective

This section aims to elucidate Cardoso's perspective on Brazilian inflation. The selected papers are presented to maximize the comprehensiveness of the debate and allow one to understand her place in the debate of ideas. While a chronological order is predominantly adhered to, there are a few instances where this sequence is momentarily interrupted without detriment to the reader's comprehension.

The goal is to contrast her work with neo-structuralist works that displayed an inertialist interpretation of inflation. However, the intention is not to rigidly categorize her as a neostructuralist or orthodox economist but rather to understand how Cardoso's intellectual development and the formulation of her inflation theory evolved in a context dominated by neostructuralist and orthodox approaches. It is worth noting that Cardoso is an alumna of PUC-Rio and maintained connections with some economists from that institution during her brief return to Rio de Janeiro after completing her doctorate. Furthermore, at the beginning of her career, she shared the structuralist approach to economics with those economists. Cardoso frequently references the ideas of the inertialists in her work and debates with them. It is also noteworthy that she is mentioned in neostructuralist articles, as will be discussed later.

Therefore, Cardoso and these academics are part of the same debate cycle and belong to the same academic network.

The neo-structuralists' inertialist interpretation of inflation was influenced by Simonsen's (1970)¹⁰² feedback model (Serrano, 2010, p.404). The theory of inertial inflation was independently developed in Brazil by two groups of economists: one composed of several professors associated with the Pontifical Catholic University of Rio de Janeiro (PUC-Rio), and another smaller group linked to the Getulio Vargas Foundation in São Paulo (FGV-SP) (Serrano, 2010, p.404).

The economists from PUC-Rio discussed in this section are André Lara-Resende, Edmar Bacha, Eduardo Modiano, Francisco Lafaiete Lopes, Pécio Arida¹⁰³, and even Eliana Cardoso herself, who, during her undergraduate years at the institution, engaged in lively debates on macroeconomic models with the economists mentioned. On the other hand, representing the FGV-SP group, we find Luiz Carlos Bresser-Pereira and Yoshiaki Nakano. While the São Paulo and Rio de Janeiro academic circles are part of our discussion, the focus leans more toward the Rio group due to its close ties with Eliana Cardoso.

Cardoso's early career is marked by her alignment with heterodox economic theory, a stance evident in her Master's dissertation, which was subsequently published as an article and chapters of a book¹⁰⁴, all co-authored with her advisor, Lance Taylor. In these early works, she put forth Keynesian-Kaleckian models, engaged with the ideas of Furtado and Latin American structuralists, and developed monetary models grounded in structuralist principles, vehemently rejecting the applicability of orthodox economic models to Brazil. However, as her career progressed, she began to display greater openness to conventional economic theory, albeit with a clear emphasis on adapting to suit the Brazilian context.

Simultaneously, while appearing more accepting of orthodox theory, Cardoso started to critique approaches to inflation that disproportionately emphasized inertia and paid less attention to other stabilizing factors such as fiscal policy and the budget deficit. This shift led her to challenge the inertia-focused approach and move away from the neo-structuralist group

¹⁰² Simonsen, Mário H. (1970). *Inflação: gradualismo x tratamento de choque*. Apec.

¹⁰³ Pécio Arida and André Lara Resende were Ph.D. students at MIT. Resende obtained his Ph.D. at 1979, same year as Cardoso.

¹⁰⁴ The book is: Taylor, L., Bacha, E., Cardoso, E., & Lysys, F. (Eds.). (1980). *Models of Growth and Distribution for Brazil*. Oxford University Press. The paper reference is: Cardoso, E. A., & Taylor, L. (1979). Identity-based planning of prices and quantities: Cambridge and neoclassical models for Brazil. *Journal of Policy Modeling*, 1(1), 83-111.

and the views she had previously espoused. The following sections will delve deeper into this transition from structuralism and her evolving perspectives.

Examining the discussion of monetary policy in Brazil, the article “Moeda, Renda e Inflação: Algumas evidências da economia brasileira”¹⁰⁵ (Cardoso, 1977) is a short discussion about money exogeneity and the relationship between inflation and currency creation. Cardoso (1977) highlights a dispute between the monetary and structuralist approaches to explain the relationship between money and inflation in Brazil and Latin America. She explains that the well-known monetary theory treats the quantity of money as pre-determined. A consequence of the money exogeneity within the quantity theory is that inflation results from money creation (Cardoso, 1977, p.424). Alternatively, Keynesians and the Structuralist approach understand that money is a variable derived within the system, and the causality goes from the price level to the quantity of money, as opposed to the monetarist view. Cardoso (1977, p.424) claims that the structuralist models had not yet been adequately formalized and attempts to standardize a structuralist model for Brazil. The paper starts by pointing out a deficiency in the monetarist interpretation. Criticizing Pastore’s (1973)¹⁰⁶ work as an example, Cardoso (1977) affirms:

Showing that the Brazilian monetary authority has the necessary instruments to control the money supply is one thing, but demonstrating that they actively applied such mechanisms and that such control of the money stock unidirectionally affects the price increase is different. The second statement is crucial in Brazilian monetarism. (Cardoso, 1977, p.425)

Cardoso (1977) applies the Sims’ test for money exogeneity to the Brazilian data. The results of Sims’s regressions for Brazil allow us to reject the hypothesis that money in Brazil is purely active, influencing GNP without responding to the variations of the latter (Cardoso, 1977, p. 428). They also show that there is probably a bidirectional causality between money and nominal income in the country (Cardoso, 1977, p.428). This assertion hits the Brazilian orthodox interpretation at its core.

¹⁰⁵ In English “Currency, income and Inflation: Some evidence of the Brazilian economy”

¹⁰⁶ Aspectos da Política Monetária Recente no Brasil (Pastore, 1973).

Next, Cardoso (1977, p.430) runs the Sims test for Sargent and Wallace's¹⁰⁷ models of hyperinflation for the Brazilian data. One model implies that the money supply's growth rate influences inflation without any inflation feedback on money growth. The second model suggests that inflation affects the money supply growth, but there is no inverse feedback of the latter on inflation. Once the models are run, the second version better fits the country's reality. The results show that changes in the inflation rate do impact the growth of the money supply¹⁰⁸, meaning money is not exogenous. The conclusion is that the Brazilian data indicates that the money supply is endogenous, following the structuralist approach.

Deepening her argument in favor of the structuralist theory, Cardoso embarks on a mission to incorporate Celso Furtado's structuralist view in macroeconomic models and applies them to important historical moments of Brazil in two papers. They will be discussed next to illustrate and provide context for her proposal and thinking during her structuralist phase. In the first one, titled "Celso Furtado revisited: a década de 30"¹⁰⁹, she examines Brazil's fiscal and exchange rate policies during the 1930s and their impact on the country's economy. The primary objective is to reinforce the perspective put forth by Celso Furtado (1959)¹¹⁰, who argued that the coffee defense policy played a pivotal role in Brazil's rapid recovery and industrial expansion starting in 1932.

Cardoso emphasizes the government's coffee defense policy as the central element for comprehending the behavior of the Brazilian economy in the 1930s. This policy maintained a high-income level for the coffee export sector, creating the conditions for industrial expansion. The author develops a simple Keynesian model that analyzes the interactions between the export and industrial sectors, considering different exchange rate regimes.

Within the model, Cardoso distinguishes between the importation of intermediate and final goods while examining the role of economic policies, particularly the exchange rate policy, by proposing models with both flexible and fixed exchange rates. Additionally, she considers the presence of idle capacity within the industrial sector.

¹⁰⁷ Sargent, T.; Wallace, N. (1973). Rational Expectations and the Dynamis of Hyperinflations. *International Economic Review*. 14(2).

¹⁰⁸ The model also suggests that inflation is not entirely independent, but the feedback of money supply growth on inflation is minimal (p. 433).

¹⁰⁹ In English: "Celso Furtado Revisited: The 1930s Decade."

¹¹⁰ His thesis is well known in Brazilian academia and was originally proposed in his seminal book "Formação econômica do Brasil" - Furtado, C. (1959). *Formação econômica do Brasil*. Rio de Janeiro: Fundo de Cultura.

Cardoso concludes that the expansion of industrial production during the 1930s was driven by the government's coffee purchases, financed through public debt and export taxes. This expansion was facilitated by the devaluation of the real exchange rate, which made foreign manufactured goods more expensive and stimulated demand for locally produced manufactured products. She underscores that the analysis of fiscal and exchange rate policies adopted by the Brazilian government in the 1930s is essential for comprehending the country's rapid recovery and industrial expansion and avoiding a significant impact from the Great Depression. When examining economic policies, she emphasizes the importance of considering the interrelationships between the export and industrial sectors.

“Celso Furtado revisitado: o pós-guerra”¹¹¹ (Cardoso, 1979b) extends the previous paper. Cardoso (1979b) presents an economic model that focuses on Brazil's trade policies in the post-war period. The model is applied to a developing economy where the industrial sector is oriented towards the domestic market and indirectly relies on coffee exports for its growth. In this analysis, as Furtado (1959) advocated, quantitative restrictions on importing industrial consumer goods play a crucial role.

These restrictions affected the domestic market and the profit rate of the industrial sector by creating a price differential between these goods and their international counterparts. It resulted in a positive effect on capital accumulation, as the limitation on the number of imported goods created a gap between their international prices and what local consumers were willing to pay. Additionally, the increase in prices of competing foreign products boosted the demand for domestic goods, further driving up their prices. As a result, the prices of industrial goods rose significantly between 1946 and 1952, boosting profit margins and stimulating investment in the industrial sector.

Cardoso's structuralist analysis is carried on in “Oferta de Alimentos e Inflação”¹¹² (Cardoso, 1979c). In this paper, Cardoso evaluates how agricultural production impacts inflation. It can be framed within a broader context of neo-structuralist analyses that aim to examine the behavior of food prices as a factor of inflationary pressure. Lara Resende (1981) also delves into the subject, explaining that escalating relative agricultural prices can intensify distributive conflicts and increase inflation in line with Latin American structuralist theory. This phenomenon arises from the scenario where the agricultural sector claims a larger share

¹¹¹ In English: “Celso Furtado Revisited: The Post-War Period” (translated by author).

¹¹² In English: Food Supply and Inflation (translated by author).

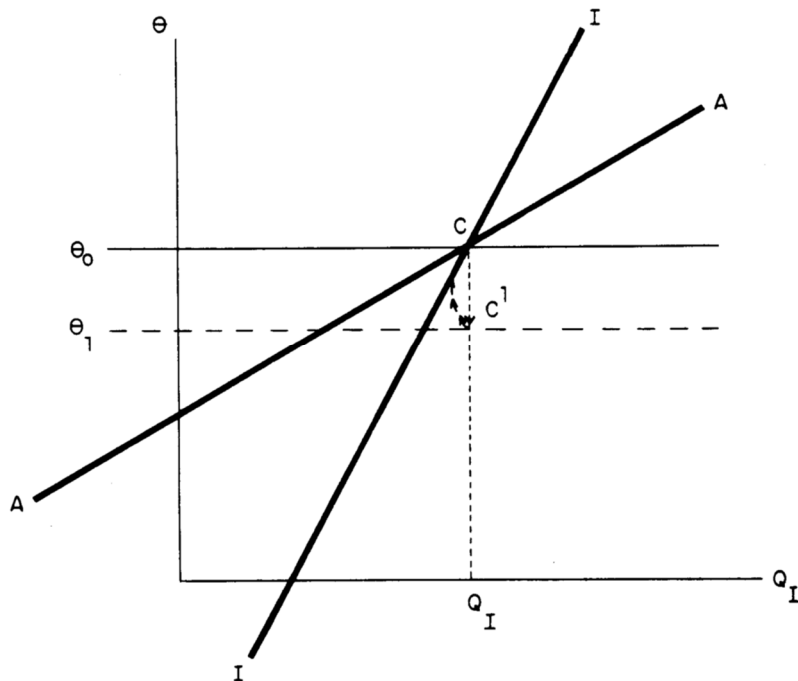
of the national income, and the demands from both labor and businesses persist at high levels, consequently driving up inflationary pressures (Lara Resende, 1981, p.145). Additionally, the theory's original formulation underscores the inflexibility of industrial demands, implying that increasing the growth rate of the agricultural sector could potentially mitigate inflationary pressures (Lara Resende, 1981, p.145).

Sayad (1979) points out that the agricultural sector's contribution to the pricing of other economic sectors is a crucial factor to consider when seeking to comprehend the inflationary phenomenon. Furthermore, he emphasizes that structuralists were the pioneers in recognizing the significance of the Latin American agricultural sector as a critical contributor to inflation in these nations (Sayad, 1979, p.2). Sayad (1981) also explores the impact of food price variability on the inflationary process and how different market structures can influence these prices. He highlights the urban supply sector's ability to regulate and mitigate price fluctuations at the consumer level, thus positively contributing to inflation reduction. It is possible due to the urban supply sector's role as an intermediary between agricultural production and urban consumers, wherein it can exercise control over agricultural product prices, ultimately reducing price volatility for consumers.

Cardoso (1979c) contends that an expansion in the industrial sector triggers an excessive demand for food, resulting in an upswing in food prices, culminating in distributive conflict. Crucially, as food prices increase, real wages fall, but industrial prices do not experience corresponding declines. This phenomenon is attributed to the capacity of capitalists to exert control over prices, stemming from the persistent presence of imperfect competition in the market.

Figure 21 is the result of a structuralist model proposed in the paper. The model displays a classic two-sector economy: the modern industrial sector with higher productivity and the outdated agricultural sector with lower productivity. In addition, there is a supposition of excess labor supply that allows wages to be adjusted at the subsistence level. The figure shows how the economy moves back and forth from its initial equilibrium and describes how the rise in inflation persists. $\Theta = P_A / P_I$ represents the relationship between agricultural and industrial prices. Q_I is the quantity of industrial output, and lines I and A mean the equilibrium in the industrial and agricultural sectors.

Figure 21 – Dynamic adjustment of the economy



Source: Reproduced from Cardoso (1979c, p.9)

Consider a scenario where workers demand higher wages in response to an increased cost of living. Starting from an initial state denoted as “C,” any upward adjustment in nominal wages automatically results in higher industrial prices and shifts the economic equilibrium to a new state “C¹” (Cardoso, 1979c, p.8). In C¹, a surplus of industrial output emerges concurrently with an excess demand for food, leading to an escalation in agricultural prices. However, since wage adjustments do not occur continuously and remain fixed relative to agricultural prices, the economy reverts to the initial state, “C” (Cardoso, 1979c, p.8).

This return to equilibrium, while effective, comes at the cost of a devaluation of real wages. This devaluation prompts a fresh cycle of wage readjustments, subsequently causing another round of industrial price increases and, thus, a return to state C¹ (Cardoso, 1979c, p.8). Therefore, the economy moves ceaselessly within this mechanism¹¹³ between C and C¹ (Cardoso, 1979c, p.8).

¹¹³ This process could also be triggered by an excessive demand instead of a rise in costs, and the final result would be the same. Regardless of the source of inflation, once there is an increase in either prices or wages, the process of constant readjustments is active and it becomes impossible to know the original cause of the persistence in inflation (p.12).

The adjustment dynamic described before shows that when the trade relations that balance the markets are incompatible with the trade relations determined by the social means of production, there is a structural imbalance in the economy (Cardoso, 1979a, p.9). Hence, the industrial product oscillates at the same time that the price level increases permanently, as prices and wages enter a spiral of consecutive readjustments. This is how inflation persists in the structuralist theory. One possibility to bring inflation down is to provoke a rise in imports. Still, this solution would bump into the problem of the possibility of financing the commercial deficit, a recurring problem in Brazil back then (Cardoso, 1979c, p.9).

When the government opts for an exchange rate devaluation, import prices increase, prompting capitalists to elevate industrial prices in response (Cardoso, 1979c, p.16). Simultaneously, this action boosts exports, temporarily achieving equilibrium in foreign accounts and bolstering income. The increase in revenue generates an excess demand for food and industrial goods, thereby elevating prices and stimulating industrial production, which, in turn, requires more imports and ultimately leads to a renewed deficit. As the economy returns to equilibrium, wages dip below subsistence levels (Cardoso, 1979a, p.16). Wages are then adjusted in subsequent rounds, leading to another round of increases in industrial prices, an excess demand for food, and a surplus supply of industrial goods. The mechanism now closely resembles the one responsible for generating the inflation spiral within a closed economy, highlighting that the benefits of a devaluation regarding price control and addressing the trade deficit are only temporary (Cardoso, 1979c, p.16).

Considering the scenario above, it becomes evident that effective stabilization policies must factor in both external and internal price stability. Such policies should combine currency devaluation with fiscal contraction measures to prevent an upswing in income and implement price control policies to curb the escalation of industrial prices (Cardoso, 1979c, p.16). Consequently, any stabilization policy is bound to reduce the income of at least one social group (Cardoso, 1979c, p.12).

Modiano (1989) also contributes to the interactions between the rural and industrial sectors in an open economy. He expanded the discussion upon prior research, notably highlighting the work of Cardoso (1979c), among others. Accordingly, to the structuralist framework conclusions¹¹⁴, his findings stress the critical role of productivity improvements in

¹¹⁴Cardoso (1979a, p.1)

domestic agriculture to achieve both deflation in food prices and increased employment, accompanied by a boost in food production.

Examining income policy effects indicates that wage hikes and mark-up increases have indeterminate impacts on industrial output and the trade deficit. Similarly to Cardoso (1979c), his results confirm that nominal wage increases unequivocally lead to higher food prices. Modiano (1989) also points out that, in an open economy, industrial output and employment may not necessarily move in opposite directions in response to changes in income variables.

Rezende (1992) critically examines the neo-structuralist discourse surrounding determining agricultural prices and inflation. Utilizing data from the Cruzado to Collor economic plans in Brazil, the author identifies an inverse correlation between inflation and agricultural prices in the country dating back to 1986. Rezende's study seeks to elucidate this phenomenon by attributing it to the subordinate role of agricultural stocks within the broader economic landscape. According to Rezende (1992), the "stock-demand" is pivotal in shaping short-term agricultural price dynamics. This emphasis on demand stocks underscores a critical departure from the prevailing neo-structuralist focus on demand flows. Unlike demand flows, stock-related demand implies that shifts in agricultural prices are less immediate, as they hinge on the storage decisions made by farmers. Consequently, "stock-demand" is crucial in comprehending short-term agricultural price fluctuations.

Rezende (1992) accentuates the limitations inherent in the neo-structuralist approach to inflation analysis, primarily stemming from its preoccupation with demand flows. This focus neglects the impact of stock-related demand in the short-term determination of agricultural prices. Such an oversight led to underestimating the repercussions of inflationary volatility on agricultural price levels. Stock-related demand, in particular, can be influenced by factors that extend beyond the realm of demand flows, including shifts in the distribution of financial wealth within the economy Rezende (1992).

To illustrate this critique, Rezende (1992, p.112) references Cardoso's (1979c) model as a prime example of the neo-structuralist framework subject to his scrutiny. He argues that this critical perspective sheds light on a fundamental issue: the structuralist analysis tends to position agricultural prices as determinants of inflation. However, he finds that the confrontation of the Brazilian inflation data reveals the opposite: inflation exerts a more substantial impact on agricultural prices than the reverse scenario (Rezende,1992, p.112).

In *Déficit Orçamentário e salários reais: a experiência brasileira na década de 60* (Cardoso, 1979d)¹¹⁵, Cardoso engages in a discussion of the interactions among inflation, output growth and real wages in Brazil from 1958 to 1967.

The model proposed by Cardoso draws upon Mundell's (1965)¹¹⁶ assessment of the effects of government spending financed by monetary expansion on output growth extended by Taylor's (1979)¹¹⁷ framework based on forced savings model assumptions. In Mundell's (1965) perspective, inflation is portrayed as a function that increases with the velocity of money, and he concludes that there exists an upper threshold for inflationary growth (Cardoso, 1979d, p. 216). Taylor, on the other hand, acknowledges that the government finances its debts through monetary emissions. However, he explores various scenarios, including where velocity remains constant, private agents undertake investments, and the government can control wage levels (Cardoso, 1979d, p. 216). The amalgamation of Mundell and Taylor's models mirrors Brazil's economic landscape during the selected timeframe.

Cardoso (1979d, p.216) summarizes the relationships among the analyzed variables in Brazil. During the 1950s, output growth in Brazil was promoted by an inflationary financing of the public budget deficit along with forced savings from the private investor's side. The forced savings were obtained at the expense of the deterioration of real wages, which allowed a relocation of resources to fund investments to the detriment of workers' income. As unions got more organized and powerful during the early 1960s, the pressure for higher wages brought inflation up. Once in power, the militaries repressed unions and wages, lowering inflation and the budget deficit. To empirically evaluate the links between the variables, Cardoso (1979y) proposes two equations for the model :

$$M' = r(v + \eta P^{*'})\Theta \quad (i)$$

$$\omega' = 0, \quad P' = 1/1-\lambda (\gamma\psi + (\varepsilon - 1) \beta - \gamma\omega) \quad (ii)$$

Equation (i) describes the relationships between inflation, budget deficit, and output growth. Equation (ii) shows the interaction between wages and inflation.

¹¹⁵ In English, "Budget Deficit and Real Wages: the Brazilian Experience in the 60s".

¹¹⁶ Mundell, Robert (1965). Growth, Stability, and Inflationary Finance. *Journal of Political Economy*. 73(2), 97-109.

¹¹⁷ Taylor, Lance (1979). *Macro Models for Developing Economies*. McGraw-Hill.

Equation (i) is obtained assuming that all of the growth in the money base is a consequence of a rise in the government debt and that money is passive since it responds to inflation. The endogeneity of money is a consideration in Cardoso's articles mentioned above. The equation implies there is feedback of the expected inflation P^* on the rate of growth of the money supply M' . It also means that the government cannot control simultaneously M' and the participation of the budget deficit in output represented by Θ^{118} because if it chooses those variables, the money supply will respond to the variations in inflation via feedback (p.219).

The second equation assumes wages are determined by the worker's bargaining power and the government's wage indexation policy. The behavior of the participation of real wages in output (ω) will depend on the performance of the parameters that represent wage repression policy. The parameter λ is the fraction of inflation passed on to minimum wages, and ε is the fraction of technical progress used to readjust salaries. In the case of an ongoing wage repression policy, λ and ε will be smaller than 1, and there will be no real gains. If $\lambda < 1$ and $\varepsilon < 1$, $\omega=0$ has a negative slope, meaning when growth is uniform, the participation of wages in output is always below the maximum value of the involvement of wages in output represented by ψ . If $\lambda < 1$ and $\varepsilon = 1$, $\omega=0$ has a negative slope. Still, the participation of wages in production is only below its maximum value ψ when inflation or a wage repression policy is undertaken. Finally, when there is no wage repression, meaning $\lambda = \varepsilon = 1$, $\omega=0$ is a vertical line, and the wages are fully readjusted by inflation and technical progress.

Subsequently, the model is applied to evaluate the Brazilian economy in the 1960s (Cardoso, 1979d pp.226-228). First, it is observed that the elasticity of the money velocity relative to the inflation rate was small, allowing the government to resort to inflationary deficit financing without causing explosive hyperinflation. The values of the parameters obtained with the model show that inflation is highly sensitive to inflationary deficit funding, but the output's sensitivity to it is minimal. Conversely, an increase in the labor share of production does not impact inflation, yet it results in a notable and inverse responsiveness of real output growth (p.228). In light of these findings, a plausible fiscal policy aimed at curbing inflation entails reducing government deficit spending, albeit at the cost of decreased output. Conversely, a reduction in labor's share of participation does not influence inflation, but it spurs output growth by freeing up resources for investment through an increase in forced savings.

¹¹⁸ $\Theta = \frac{G}{X} - \left(\frac{T}{PX} \right) = (g - \tau)$ (p. 219).

Therefore, within the model's framework, Cardoso (1979d) concludes that a viable way to mitigate inflation while fostering output growth conditions involves reducing the deficit and decreasing wages. This strategy mirrors the approach implemented by the PAEG in 1964¹¹⁹.

According to Google Scholar, this paper has six citations, all done during the 1980s. The most relevant mention to the narrative here is an article by Bacha and Lopes (1979). Bacha and Lopes (1979) criticize the Phillips Curve-based monetarist analysis that disregards Brazilian inflation's unique feature: the wage policy. They also propose an interpretation based on Mundell's debate of the government's financing of debt through inflation tax¹²⁰. The authors claim that "(...) the paper builds on previous work of Brazilian economists to propose a tentative outline of an alternative macroeconomic paradigm for the study of stabilization policies in Brazil". Cardoso (1979b) is explicitly mentioned as one of the works fitting this line of thought and is used to support their claims that the forced savings mechanism arises from the wage policy and is a cumulative effect behind the persistently high inflation rates.

Lopes and Bacha (1979) posit that Brazil's wage policy wields substantial influence over the labor market and the broader economy. They contend that this policy's impact extends to observed wage rates by establishing a "statutory wage" that firms and workers are hesitant to defy, fearing damage to their reputation. Additionally, they highlight the self-reinforcing nature of wage indexation, wherein wages adjust to match inflation, triggering further inflation and wage hikes. This wage-price spiral can be challenging to break, fostering expectations of sustained inflation and wage growth, thereby perpetuating inflationary pressures. Consequently, conventional Phillips Curve models struggle to elucidate Brazilian inflation dynamics, failing to account for this spiral. The authors argue that explicitly incorporating wage policy into macroeconomic models is essential for a more comprehensive understanding of the Brazilian economy.

¹¹⁹ Cardoso (1979b, p. 233) recognizes that the policy had a very high cost to workers.

¹²⁰ Regarding the impact of the inflation tax on private and government savings, the authors posit that the inflation tax may diminish private savings by affecting real disposable income. This occurs as the real value of money declines, effectively imposing a tax on individuals and businesses based on their money holdings. Consequently, this reduction in private savings can limit the resources available for private investment, as savings are redirected to cover the inflation tax.

Furthermore, the authors point out that the accumulation of real balances, essential for maintaining the real money-output ratio in a growing economy, relies on private savings and can displace private investment. Conversely, due to monetary expansion, the government can obtain resources from the private sector since individuals prefer to retain a fixed portion of their wealth in monetary form. However, the authors argue that this does not contribute to aggregate savings; it merely represents a transfer of savings from the private to the public sector.

Regarding the interplay among wages, growth, and inflation, Lopes and Bacha (1979) suggest that wage share is pivotal in shaping observed market wage behavior¹²¹. Consequently, a substantial 50-percentage-point reduction in the annual inflation rate from an initial 100% results in a lasting one-percentage-point decrease in the actual output growth rate, which poses a somewhat discouraging scenario.

The wage policy stimulates the forced saving effect through its influence on real wages and the wage share of national income. This effect arises due to the inverse relationship between the real wage and the inflation rate stemming from the wage policy. When wages aren't entirely indexed to inflation, an uptick in inflation leads to a dip in the real wage, subsequently driving up profits, savings, and private investment—a phenomenon referred to as the forced savings effect. Conversely, full wage indexation—where wages automatically adjust to match inflation, thereby maintaining constant real wages—eliminates the forced savings effect¹²².

When it comes to policies aimed at inflation control in the context of Brazil's unique wage policy, Lopes and Bacha (1979) steer clear of the wage squeeze approach mentioned earlier by Cardoso (1979d). They prioritize alternative strategies, such as stabilizing through full wage indexation, which involves aligning wages with inflation to minimize its impact on workers' purchasing power. Another line to consider is combating inflation through capacity expansion, including increasing the supply of goods and services to alleviate price pressures.

Despite occasional disagreements, it is evident that Cardoso's early work can be positioned within the same alternative analytical framework as the economists from PUC-Rio. This assertion has been substantiated through a comprehensive examination and comparison of their work. As demonstrated, the neo-structuralists frequently draw upon her research to support their conclusions, reflecting a substantial alignment within their heterodox perspective. Furthermore, Cardoso dedicated entire papers to the analysis of Furtado's thesis and formulated heterodox models to elucidate the intricacies of inflation dynamics. Given this compelling evidence, one can reasonably conclude that Cardoso underwent a structuralist-heterodox phase in her intellectual trajectory.

¹²¹ The results show that alterations in the wage share can exert significant effects on the inflation rate. For instance, if wages are indexed semi-annually and the initial wage share in total income stands at 60%, a reduction in the inflation rate from 100% to 50% per year leads to a decrease in the growth rate by four-fifths of a percentage point (the wage share rises to 64%).

¹²² However, they note that extensive indexation increases the economy's vulnerability to supply shocks.

3.3.2 - Shifting Perspectives: Contesting Inertialism in Inflation Theory

This section provides Cardoso's divergence with neo-structuralists on the issue of inflation inertia, marking a distancing from her initial structuralist perspective. This shift becomes evident in "O processo inflacionário no Brasil e suas relações com o déficit e a dívida do setor público"¹²³ (Cardoso, 1988a). Cardoso (1988a) discusses the sudden inflation rate surge between 1975 and 1985 in this paper.

The inflation rate was initially at 45% in 1979, then surged to 100% between 1980 and 1982, further escalating to 200% in 1983-1984, ultimately reaching an alarming 400% by the end of 1985 (Cardoso, 1988a p.17). Cardoso's analysis underscores that this rapid acceleration of inflation can be unequivocally linked to a shift in the source of deficit financing, resulting in elevated real interest rates. The focus on inflationary financing of the budget deficit per se is not always sufficient to explain the abnormal behavior of Brazilian inflation. This shift was precipitated by the absence of foreign resources, which compelled the government to rely on domestic debt financing. Consequently, comprehending the role of the external sector is paramount in elucidating this complex economic process.

Cardoso (1988a) once again maintains that the monetarist model of inflationary financing of the debt does not appropriately explain Brazilian inflation since it fails to consider fiscal deficits not funded by money expansion (Cardoso, 1988a p.5). The analysis of the non-monetary funded debt is the main highlight of this work. However, she also criticizes the heterodox inertialist thesis that resulted in proposals such as the Cruzado Plan because they fail to consider fundamental variables in the inflationary process (Cardoso, 1988a p.5). In her words:

On the other hand, the inertialists set aside the analysis of fundamental variables in the determination of inflation. In the formulation of the Cruzado Plan, economists emphasized inertia as the most important factor in inflation. They chose, therefore, a shock treatment centered on price freezes. And they forgot to pay attention to the budget constraint. Nowadays, the Cruzado Plan is seen as the most obvious example of the failure of heterodox plans to eliminate inflation and, therefore, forces economists to

¹²³ In English: The inflationary process in Brazil and its connection with deficit and the debt of the public sector.

once again examine the behavior of fundamental variables in the determination of macroeconomic equilibrium. (Cardoso, 1988a, p. 5, Translation by Author)

The divergence from orthodoxy in the theoretical framework yields different policy approaches. Orthodox and heterodox stabilization programs diverge in their approaches to tackling inflation. Orthodox programs prioritize fiscal correction and strict monetary policy as the exclusive instruments for stabilization, whereas heterodox programs combine fiscal correction with income policies. Heterodoxy acknowledges that aggregate demand discipline alone is insufficient for stability and recognizes the significant role of inflationary inertia, necessitating income policies to halt inflation (Cardoso, 1988b p.389). That is the case of the Cruzado plan, which sought to implant income policy to control inflation.

Although Cardoso (1988a) does not mention names, it is possible to examine what the economist behind the Cruzado plan advocated. The two main heterodox proposals to combat inflation developed in the second half of 1984 were Lopes' heterodox shock proposal and Lara Resende's indexed currency proposal (Marques, 1988). The first proposal highlighted the self-sustaining mechanism of Brazilian inflation and suggested, as a means to unlink present and future inflation from past inflation, an abrupt and complete freeze on prices and wages, accompanied by passive monetary and fiscal policies (Marques, 1988).

On the other hand, the indexed currency proposal advocated for the creation of a financing source for government expenditures at zero real interest rates and the determination of the appropriate rate of money supply expansion in a price-stable environment so as not to reignite inflationary expectations or cause deflation and an excessive increase in the real interest rate (Marques, 1988). This proposal would later become a fundamental piece of the Real Plan.

The neo-structuralist economists' diagnosis of inertia as a primary driver of inflation led to skepticism regarding what they deemed orthodox¹²⁴ tools for combating inflation. The lack of results of implementing those policies in Brazil seemingly backed this disbelief¹²⁵. This group of scholars concluded that adopting orthodox austerity measures, which often led to recessions, was insufficient to address the issue in Brazil. Consequently, their departure from orthodox economic theory led to the development of alternative policies.

¹²⁴ Lopes (1985, p.147) refers to austerity policies as orthodox policies.

¹²⁵ Lopes (1985), Arida and Resende (1985) debate the failure of orthodox policies in stabilizing the Brazilian economy.

Orthodox and heterodox stabilization programs differ significantly in their approaches to tackling inflation. Orthodox programs emphasize fiscal correction and strict monetary policies as the sole instruments for stabilization (Cardoso, 1988b, p.389). In contrast, heterodox programs incorporate fiscal correction alongside income policies. Heterodoxy acknowledges that solely relying on aggregate demand discipline is inadequate for achieving stability (Cardoso, 1988b, p.389). It recognizes the substantial role inflationary inertia plays and advocates using income policies to curb inflation (Cardoso, 1988b, p.389). One notable example is the Cruzado Plan, which aimed to implement income policies as a means of inflation control.

Arida and Resende (1985, p.4) discuss the reaction to the claim that orthodox policies had failed in Brazil. One perspective challenges the notion that austerity measures have indeed failed. It posits that monetary restraint exhibits a delayed impact on inflation. According to this viewpoint, the initial decrease in economic output is viewed as the preliminary phase of the disinflation process, which sets the stage for a subsequent period during which output would recover, ultimately leading to a reduction in inflation.

On the other hand, the second perspective questions both the efficacy and the very existence of austerity measures. It argues that inflation requires an underlying fiscal deficit funded by monetary expansion. They suggest fiscal deficits are inaccurately measured, asserting inflation reveals concealed fiscal deficits, denying the existent data. According to the authors, "The actual figures which show a dramatic decline in fiscal deficit from 8% in 1982 to zero in 1984 are viewed with suspicion. The fact that they have been endorsed by IMF and Central Bank officials and cohere to the entire set of data available is not deemed sufficient" (Arida & Resende, p.4).

It is important to emphasize that they don't disregard the importance of controlling the deficit. They believe that eliminating the fiscal deficit is a necessary but insufficient condition for effectively curbing inflation (Arida and Resende 1985, p.4). While a budgetary deficit may contribute to inflation, it's not its sole or primary determinant, and factors like monetary policy, supply shocks, and indexation practices also play significant roles (Arida & Resende, 1985, p.4).

Arida & Resende (1984, p. 18) argue that demand management policies have proven ineffective in controlling inflation in Brazil due to their inherently inertial nature. In response

to these challenges, the authors propose a monetary reform strategy involving de-indexation through money indexation. They posit that this approach is a necessary precondition for the feasibility of demand policies to effectively impact the price level's trajectory. (Arida & Resende, 1985, p.18). The assertion regarding the prominence of inflation's inertial nature, combined with recognizing a budget deficit equal to zero in 1984, aligns with Cardoso's earlier criticism of prioritizing inertia as the primary factor influencing inflation trends. Distancing herself from Arida and Resende's (1984) analysis, Cardoso (1988) seems convinced that the deficit has a central role in mega-inflation and is different from zero. Still, she disagrees that monetary emissions funded it¹²⁶.

Lopes (1985)¹²⁷ also fits into Cardoso's critique. He proposes that chronic inflation is predominantly inertial in the absence of shocks, meaning that current inflation is determined by past inflation, regardless of the state of expectations (Lopes, 1985, p.137). Lopes (1985, p.138) argues that in a chronically inflationary environment, economic agents develop a defensive behavior in price formation, attempting to restore the previous peak of real income at each periodic price adjustment. This inertial¹²⁸ hypothesis about inflationary tendencies is contrasted with the conventional model that views inflation as a process driven mainly by expectations (Lopes, 1985, p.135).

Lopes (1985, p.147) enforces that inertia has been the primary concern in Brazilian inflation since the mid-1970s. He contends that to eliminate inflation, the focus of policies should shift away from generating deflationary demand shocks and recessions that will not fix the problem towards designing mechanisms capable of breaking the inertial trend of inflation (Lopes, 1985, p.147). As already mentioned, his suggestion was the "heterodox shock," which is very similar to what was implemented in the Cruzado plan.

In early 1986, there were concerns about a significant inflationary surge in Brazil due to widespread indexing mechanisms and a reduction in the frequency of wage adjustments, raising expectations of adopting unconventional anti-inflation measures (Marques, 1988). The Cruzado Plan was introduced in March 1986, involving price and wage freezes, a new currency

¹²⁶ Unlike the first perspective that was presented by Arida and Resende (1985).

¹²⁷ This paper was presented in a conference in Washington D.C. in 1984 (Bresser, 2010).

¹²⁸ Drawing a clear distinction between wage indexation and inflation inertia is necessary. As noted by Lopes (1985, p.139), the concept of formal indexation can play a crucial role in stabilizing inertial inflation. It achieves this by tempering the system's propensity to magnify the impact of real shocks on inflation. In essence, formal indexing (the wage policy), is a mechanism that automatically adjusts wages and other income components based on past inflation rates. In contrast, inflation inertia characterizes the tendency of current inflation to be shaped by past inflation levels, irrespective of prevailing expectations (Lopes, 1985, p.147).

(the Cruzado), contract indexation, and reduced import tariffs. Initially well-received, it led to economic challenges in 1986, including a growing public deficit, reduced tax revenue, increased imports, and shortages due to the freeze (Marques, 1988). The government announced fiscal and monetary adjustments in November 1986 to address these issues. Despite these efforts, economic difficulties persisted in early 1987, such as declining industrial production and rising unemployment (Marques, 1988).

The reasons behind the failure of the Cruzado Plan have been a subject of debate, with a popular opinion among some critics being that the purely inertial inflation diagnosis was a decisive factor in its downfall (Barbosa & Pereira, 1987). The underlying idea behind this hypothesis was that Brazilian inflation was driven by past inflation and supply shocks, making it challenging to control through conventional policies such as monetary policy (Barbosa & Pereira, 1987). As a result, the Brazilian government adopted unorthodox measures, such as the Cruzado Plan, which aimed to disindex the economy and reduce inflation through initial shocks (Barbosa & Pereira, 1987). However, these measures proved insufficient in addressing the issue of inertial inflation, and the Brazilian economy continued to grapple with high inflation rates in the following decades (Barbosa & Pereira, 1987). The authors reinforce that Brazilian inflation cannot be explained solely by inflation inertia but also by other factors, such as supply shocks and inadequate economic policies.

Cardoso (1988a) also rejects the focus on inertia and delves into how the budget deficit can play a prominent role in driving up inflation. While Cardoso maintains some reservations about the monetarist theory, her approach in this paper significantly departs from her earlier stance. Cardoso (1988a) acknowledges and integrates some aspects of the monetarist view, albeit with some modifications. This marks a departure from her position in the earlier papers when she strongly rejected the monetarist explanation of inflation in favor of the neo-structuralist approach.

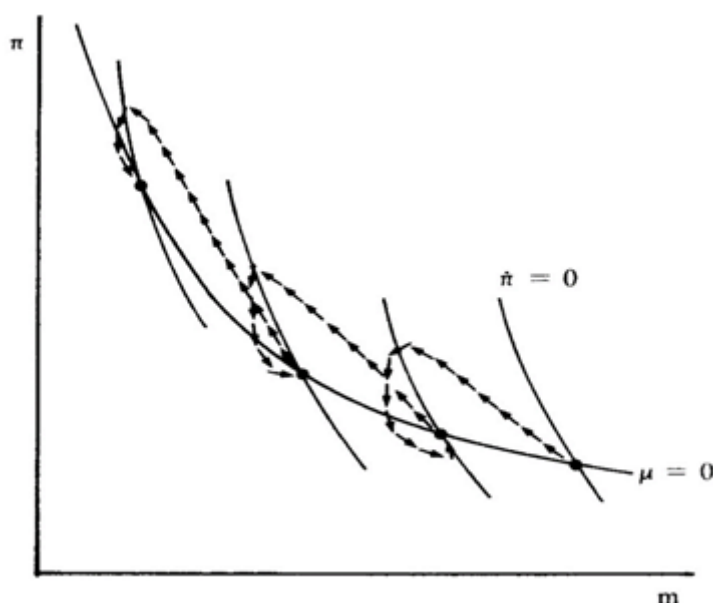
Cardoso proposes an interpretation that extends the monetarist model to incorporate the seigniorage and the financial market into an open economy (Cardoso, 1988a p.13). The curve $\mu = 0$ represents the combinations between the inflation rate and the real monetary base (Cardoso, 1988a p.13). It remains constant (given the sum x of the monetized components of the budget deficit and the increase in reserves) to the right of the curve; the inflation rate is greater than that of the rate of monetary expansion and real balance decline (Cardoso, 1988a p.13). To the left of the curve, the inflation rate is lower than the expansion of the monetary

base, and real cash flows are increasing. $\pi = 0$ represents the combinations between the inflation rate and real monetary base considering constant inflation given the full-employment equilibrium real interest rate. Points to the right of $\pi = 0$ represent economic boom and inflation rising (Cardoso, 1988a p.14). Points to the left of $\pi = 0$ represent periods of unemployment and falling inflation rates. The intersection of the curves corresponds to the point of equilibrium with full employment and constant inflation rates (Cardoso, 1988a p.14).

Figure 22 showcases the mechanism behind Brazilian inflation from 1979 – 1985, before the first Cruzado Plan, which was implemented in 1986 (Cardoso, 1988a p.16). According to Cardoso (Cardoso, 1988a p.11), the monetarist seigniorage model fails to represent the Brazilian case because since they assume all budget financing necessarily increases the monetary base and causes inflation, it implies a positive correlation between inflation and seigniorage. However, between 1979 and 1985, the inflation rate increased, but the seigniorage percentage in output remained constant at 2% (Cardoso, 1988a p.11). The constant seigniorage rate is an outcome of non-monetized debt financing in Brazil. Instead, the debt was financed via trade surpluses and increased domestic debt.

The process begins when a crisis in the balance of payments requires a currency devaluation, inducing a trade surplus (Cardoso, 1988a, p.16). At the same time, the International Monetary Fund imposition required that the public debt be financed with an increase in the domestic debt instead of raising domestic credit (Cardoso, 1988a, p.16). Therefore, the monetized components of the public debt remain untouched, and so does the curve $\mu = 0$ (Cardoso, 1988a p.16). At first, the real devaluation stimulates exports, raising domestic activity levels and producing more inflation (Cardoso, 1988a, p.16). As inflation grows and the money expansion delays, the cash flow decreases, and the interest rate increases. The economy moves to a new equilibrium between booms and recessions (Cardoso, 1988a, p.16). The higher equilibrium real interest rate counterbalances the devaluation of the currency and the commercial surplus, dislocating the curve $\pi = 0$ to the left. The economy moves from a lower inflation equilibrium to a higher one for successive rounds (Cardoso, 1988a, p.16). This is the mechanism that put Brazil on a path of high inflation.

Figure 22 – Successive increases of the full-employment equilibrium real interest rate



Source: Cardoso (1988a, p.16)

Therefore, the change in the form of debt financing from external to domestic and the growth of trade surpluses made it possible to increase interest rates and inflation without an increase in seigniorage and inflationary debt financing between 1979-1985. However, Cardoso highlights that the previous results do not mean that the budget deficit is not essential to explain Brazilian inflation. She reinforces that it can pose a massive obstacle to fiscal consolidation, as it did in 1986 after the Cruzado Plan failed to curb inflation.

Cardoso (1988a) is a paper based on chapter 7 of the book *Macroeconomia da Dívida Externa* (Cardoso & Fishlow, 1989)¹²⁹, coauthored with Albert Fishlow.¹³⁰ The book provides a rich historical and political context describing the evolution of the Brazilian debt to sustain the analysis of the Brazilian external debt, so the article is part of more extensive joint research. The book was also published as seven chapters of the NBER book titled “Developing Country Debt and Economic Performance - Volume 2” (1990). “External Debt, Deficit, and Inflation” (Cardoso & Fishlow, 1990) is the fifth chapter of the NBER book and a translation of chapter 7 of the Brazilian edition. This paper has no citation on the Google Scholar basis, but it is an

¹²⁹ In English: The Macroeconomics of the Brazilian External Debt

¹³⁰ The paper version has minimal changes, like the symbols of some equations, the introduction is slightly changed (but the meaning is the same) and some of the graphics look different.

important piece to understand her intellectual development. Therefore, it was chosen to be discussed in this chapter.

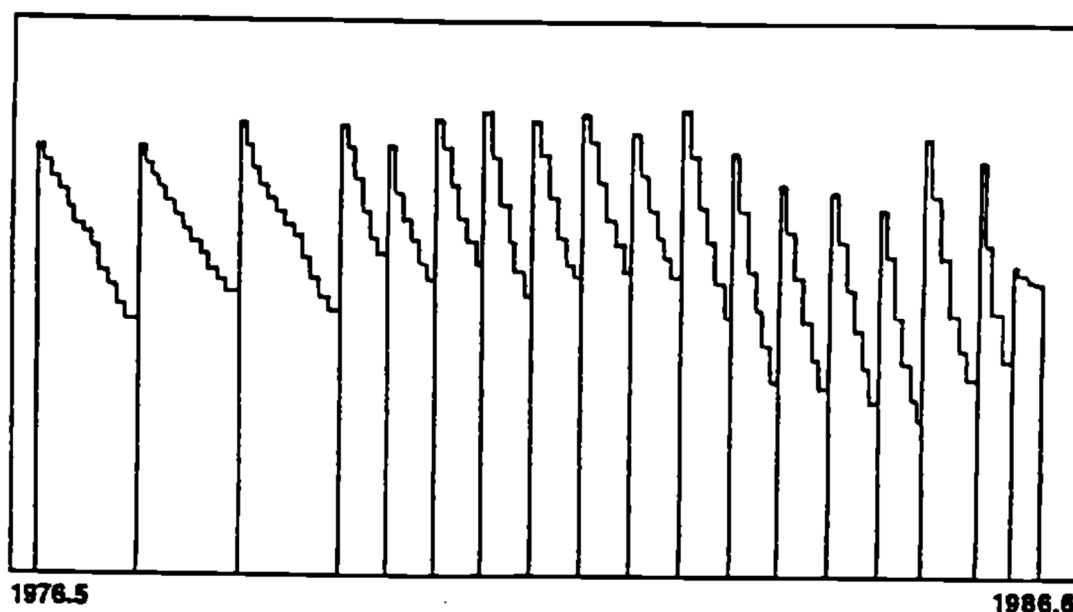
In “Brazil’s Tropical Plan” (Cardoso & Dornbusch 1987), Eliana Cardoso and Rudiger Dornbusch discuss the institutional dimension of Brazil’s inflation process and compare the stabilization efforts of the PAEG (1964-66) and the Cruzado Plan (1986). They highlight the importance of implementing income policies and demand restraint for successful stabilization and compare the strengths and weaknesses of each program. According to the authors, the PAEG plan was “gradualist and two-handed, relying on the supply side on wage repression” (Cardoso & Dornbusch, 1987, p.2). In contrast, the Cruzado plan was “a heterodox shock treatment centered around an uncompromising price freeze and paying insufficient attention to the need for fiscal restraint” (Cardoso & Dornbusch, 1987, p.2). They argue that fiscal restraint was crucial in the success or failure of these stabilization efforts. Overall, the paper highlights the importance of demand restraint and fiscal restraint for successful stabilization.

Cardoso and Dornbusch (1987, p.1) begin their analysis by asserting that "the inflation dynamics in Brazil are deeply entrenched within its institutional framework and differ significantly from hyperinflations, where pricing and wage adjustments are linked to exchange rate fluctuations on an hourly basis." This distinction implies that traditional methods of curbing inflation¹³¹, such as restricting money supply and exchange rate adjustments, are impractical in the Brazilian context (Cardoso & Dornbusch, 1987, p.1). Effective stabilization in Brazil requires acknowledging the inherently retrospective nature of inflationary adjustments and redirecting the focus towards demand-driven policies rather than relying exclusively on supply-side measures, as both programs had done. The aversion to demand-restricting policies was driven by the desire to avoid the adverse consequences of a recession (Cardoso & Dornbusch, 1987, p.1).

Institutional arrangements in high-inflation economies provide an automatic resetting of real wage to a peak, and up to the subsequent adjustment, the wage is eroded by inflation (Cardoso & Dornbusch, 1987, p.2). In Brazil, this resetting period shrunk from a yearly to a semestral base in 1979, causing a supply shock that doubled inflation. In the 1980s, the adjustment period shrunk to 3 months (Cardoso & Dornbusch, 1987, p.3). The wage adjustment pattern and its shortening are visible in the tooth saw in Figure 23.

¹³¹ Wages for instance were automatically adjusted by a rule imposed in the PAEG that considered past inflation for the adjustment.

Figure 23 – Minimum Real Wage Monthly Data – Adjustment Pattern



Source: Reproduced from Cardoso and Dornbusch, 1987 p. 3

The adjustment pattern shown above results in wage adjustment lag becoming economic agents' adjustment costs, translating into higher real wages. Cardoso and Dornbusch (1987, p.4) state that the puzzle is why adjustment intervals show inertia and why adjustment intervals do not become smaller at a faster pace when inflation accelerates, making costs from lagged adjustment for wage earners smaller and roughly constant (Cardoso & Dornbusch, 1987, p.4). The inflation process is described by:

$$(1) P_t = W_t + gap_t + u_t$$

$$(2) W_t = P_{t-1} + v_t$$

Equation 1 represents the inflation path. It shows that current inflation (P_t) is affected by past inflation (P_{t-1}) through indexed wages (W_t), the output gap, or unemployment (gap_t), and supply shocks (u_t) (Cardoso & Dornbusch, 1987, p.5). Unemployment affects inflation because labor turnover can be used to cut wages and costs. Some implications of the inflation process are pointed out. First, supply shocks in Brazil are automatically transmitted to future periods due to indexation of the financial system, tax structure, and public debt (Cardoso &

Dornbusch, 1987, p.6). This results in full accommodation of any change in the inflation rate (Cardoso & Dornbusch, 1987, p.6).

Full indexation in the new democratic regime context implies that cutting the link between past and present inflation created by average real wage requires increasing inflation rates (Cardoso & Dornbusch, 1987, p.6). However, to raise real prices, exchange rates and public sector prices must be adjusted higher and in shorter intervals than wage adjustments (Cardoso & Dornbusch, 1987, p.6). Second, the indexation means that a slowdown in the real growth rate or nominal spending does not eliminate inflation automatically. Also, the neoclassical answer of re-contracting the labor force with reduced wage adjustments in the face of a shift to a non-inflationary monetary regime is implausible (Cardoso & Dornbusch, 1987, p.6). Hence, inertia is a good reason to use income policies as a stabilization strategy (Cardoso & Dornbusch, 1987, p.6), as it was done in both stabilization plans.

Subsequently, an examination of the stabilization plans is undertaken. The PAEG (1964-1966) stabilization plan, devised to gradually curb inflation over three years through a combination of fiscal consolidation and income policies, was introduced in response to an economic crisis that provided the pretext for the military coup in March 1964 (Cardoso & Dornbusch, 1987, p.7). Key components of the program included fiscal consolidation, which resulted in a gradual reduction of the deficit from 4.2 percent of GDP in 1963 to 1 percent in 1966 (Cardoso & Dornbusch, 1987, p.7), and an income policy that entailed the adoption of a wage adjustment rule underestimating inflation. Consequently, this rule led to a 15 percent decrease in real minimum wage between 1964 and 1967 (Cardoso & Dornbusch, 1987, p.8). At the program's outset, a 70 percent devaluation of the exchange rate was also implemented (Cardoso & Dornbusch, 1987, p.8).

Remarkably, the program effectively curtailed inflation without precipitating economic decline. Inflation, which stood at 144 percent in the first quarter of 1964, fell to 57 percent in 1965 and further decreased to 38 percent in 1966. Meanwhile, industrial production experienced a temporary 5 percent decline but swiftly rebounded, surpassing the pre-crisis level by 6 percent in 1966 (Cardoso & Dornbusch, 1987, p.9). The 1964-1966 stabilization plan positioned the country for a phase of growth characterized by stable inflation (Cardoso & Dornbusch, 1987, p.9).

On February 28, 1986, the Cruzado plan was implemented against the backdrop of a staggering annual inflation rate of 400 percent. This ambitious initiative constituted a heterodox

shock therapy centered on implementing a rigorous price freeze, albeit without due attention to imposing a much-needed budgetary constraint (Cardoso & Dornbusch, 1987, p. 10). The roots of this inflationary crisis can be traced back to the onset of the second oil shock, which set in motion the relentless inflationary spiral that the Cruzado plan aimed to quell. Throughout the 1980s, inflation persisted, propelled by a confluence of factors, including shortened wage-setting intervals, a 1983 depreciation in the real exchange rate, agricultural calamities, price corrections within the public sector, and subsidy reductions (Cardoso & Dornbusch, 1987, p. 10).

The plan's objective was to dismantle the inertia generated by the wage regulation policies initiated in 1964, which entailed wage catch-up adjustments to compensate for prior inflation. In order to achieve this goal, the Cruzado plan established wages at the average real wage level and subsequently imposed a wage freeze to halt indexation practices (Cardoso & Dornbusch, 1987, p. 11). A new currency, the Cruzado, was introduced as a pivotal aspect of the program. Additional measures encompassed a comprehensive freeze on all prices, the exchange rate, and the monetization¹³² of the economy.

Between February and June of 1986, cumulative inflation registered at zero, and industrial production experienced a significant upswing of 12 percent (Cardoso & Dornbusch, 1987, p. 12). Nevertheless, by October of the same year, inflation expectations had once again soared (Cardoso & Dornbusch, 1987, p. 13). Subsequently, a critical stabilization measure was the imposition of a debt-to-income ratio of 50%, encompassing both domestic and foreign debt. This safeguard was aimed at taming inflation, given the prevailing indexation practices and elevated real interest rates (Cardoso & Dornbusch, 1987, p. 13). Due to the substantial debt burden and an insufficient improvement in budget performance, it was anticipated that the government might resort to inflating the debt load, which in turn led to a rapid escalation of nominal interest rates and the black market premium (Cardoso & Dornbusch, 1987, p. 13). Consequently, the issue of debt became a formidable obstacle to stabilization in 1986, with the high debt-to-income ratio and inflationary expectations exerting upward pressure on interest rates and the black market premium (Cardoso & Dornbusch, 1987, p. 13).

¹³² The monetization is necessary because once prices become stable, demand for real cash balances increase and real interest rates could become sharply positive, aggravating the fiscal imbalance (Cardoso & Dornbusch, 1987 p.15).

Despite the initial success of the Cruzado plan in taming inflation, it eventually culminated in a severe economic downturn and failed to ensure long-term economic stability (Cardoso & Dornbusch, 1987, p. 13). The plan predominantly relied on price controls and other heterodox policies that proved challenging to sustain over an extended period. Furthermore, it failed to address the underlying structural issues inherent in the Brazilian economy, such as fiscal imbalances and low productivity (Cardoso & Dornbusch, 1987, p. 15). Consequently, inflation began to rise once more in the late 1980s.

In essence, the primary reason for the success of the 1964 stabilization and the failure of the 1986 attempt lies in their divergent approaches. The 1964 program embraced a gradualist strategy that simultaneously tackled supply-side and demand-side factors. In contrast, the 1986 program adopted a heterodox shock treatment centered on price controls while neglecting the critical aspects of fiscal adjustment and structural reforms. Income policies as part of stabilization were proposed by Lopes (1985) and implemented as part of the Cruzado Plan. However, Cardoso and Dornbusch take as an example of successful income policy implementation the wage policy implemented with the PAEG because despite repressing workers' income, it was successful at mitigating inflation because it was coupled with fiscal adjustment as opposed to imposing a passive role for fiscal and monetary policy as the Plano Cruzado did¹³³. The institutional dimension of inflation, primarily revolving around the wage adjustment rule and the disproportionate impact of supply shocks on the economy, set the stage for the transformation of inflation into hyperinflation in the 1980s.

The paper has a total of 85 citations¹³⁴; those under consideration in this section have been selected for their ability to enrich the discourse in this thesis. Since the divergence in the Cruzado Plan's approach to inflation was previously addressed, this discussion will shift its focus to a distinct topic to enhance our grasp of Cardoso's perspective. Specifically, we will explore how various authors approach the relationship between indexation and inertia and compare their approaches to Cardoso's.

Ball and Cecchetti (1991) frame Cardoso and Dornbusch (1987) in discussing whether indexation is inflationary. On one side of the debate, Jo Anna Gray (1976)¹³⁵ and Stanley

¹³³ A passive monetary and fiscal policy as part of stabilization is proposed by Lopes (1985) and was implemented in the Cruzado plan.

¹³⁴ Many of them use the paper just to justify a claim or a model that they are providing.

¹³⁵ Gray, J. A. (1976). Wage Indexation: A Macroeconomic Approach. *Journal of Monetary Economics*, 3, 221-235.

Fischer (1977)¹³⁶ have emphasized the potential for wage indexation to either stabilize or disrupt economic output (Ball & Cecchetti, 1991, p.1310). According to the Gray-Fischer theorem¹³⁷, wage indexation stabilizes output when shocks are nominal but destabilizes it when shocks are real¹³⁸ (Jadresic, 1996, p.4). This phenomenon arises because nominal shocks, such as changes in the money supply or exchange rate, can lead to changes in the price level and inflation rate (Jadresic, 1996). In an economy with wage indexation, wages are adjusted in response to changes in the price level or inflation rate, which helps to stabilize¹³⁹ the economy by reducing the variability of output and inflation (Jadresic, 1996).

Later, Fischer (1988)¹⁴⁰ introduced the concept of differentiating between ex-ante and ex-post indexation, which he had not addressed in his earlier studies (McNelis, 1988, p. 158). Fischer (1988) anticipated that ex-post indexation, where wages are tied to past inflation rates, might increase output instability. Rather than expediting the disinflation process, ex-post indexation could have the opposite effect (McNelis, 1988, p. 158). This type of indexing introduces inertia into the inflationary process and has the potential to significantly elevate the output and employment costs associated with inflation reduction (McNelis, 1988, p. 158). Introducing this result in the Gray-Fischer approach, the optimal indexing arrangement is based on ex-ante indexation, wherein wage adjustments are linked to expected inflation rates (McNelis, 1988, p. 158).

Ball & Cecchetti (1991, p.1310) claim that Arthur Okun (1971), Mario Simonsen (1983), and Eliana Cardoso and Rudiger Dornbusch (1987) interpretations are in contrast to the Gray-Fischer approach, because they sustain that wage indexation is inflationary (Ball &

¹³⁶ Fischer, Stanley. (1977). Wage indexation and macroeconomics stability. *Carnegie-Rochester Conference Series on Public Policy*, 5, 107–147.

¹³⁷ This term was borrowed from Jadresic (1996) who reviews the theorem. According to his paper, it seems like the theorem is a well established result in the indexation literature.

¹³⁸ Real shocks, characterized by shifts in productivity or alterations in technology, often bring about changes in the output gap, representing the disparity between actual output and potential output. In an economy with wage indexation, wages adapt in response to fluctuations in the price level or inflation rate. However, they do not align with variations in the output gap. Consequently, wage indexation can foster a feedback loop from past to current inflation, potentially exacerbating macroeconomic instability when confronted with real shocks. It's important to note, though, that the applicability of the Gray-Fischer theorem may not be uniform across all scenarios. The impact of wage indexation on macroeconomic stability is contingent upon various factors, including the nature of the shocks impacting the economy and the specific indicators used for indexation (Jadresic, 1996).

¹³⁹ Jadresic (1996) uses a simple model to show that wage indexation can lead to greater output instability and inflation persistence, even in the absence of nominal shocks. The study suggests that wage indexation can create a feedback effect from past to current inflation, which can destabilize output and reduce the effectiveness of monetary policy. The study concludes that policymakers should consider the potential negative effects of wage indexation on macroeconomic stability and explore alternative policies to promote stability (Jadresic, 1996, p.17).

¹⁴⁰ Fischer, Stanley. (1988). Real Balances, the Exchange Rate, and Indexation: Real Variables in Disinflation. *Quarterly Journal of Economics*, 103, 27-50.

Cecchetti, 1991, p.1310). Ball & Cecchetti (1991, p.1310) disclaim that, at that time, it was hard to formalize the argument that indexation was inflationary because economists lacked models of the sources of inflation. Also, indexation has one inflationary effect (lower costs of inflation) and one anti-inflationary effect (a steeper Phillips curve), resulting in a net ambiguous impact (Ball & Cecchetti, 1991, p.1310).

The stance taken by Brazilian neo-structuralists is illustrated in the following few paragraphs. Bresser and Nakano (1984) sustain that indexation can affect inflation in various ways. An autonomous price increase in a fully indexed economy leads to an inflationary rise precisely equal to that original increase. This inflation rate elevation occurs through a multiplier mechanism that eventually raises all other prices in the same proportion (Bresser & Nakano, 1989). Furthermore, both formal and informal indexation are potent factors in maintaining the high inflation level, as they preserve profit margins and real wages (Bresser & Nakano, 1989). In summary, indexation could contribute to protecting the inflation level and price rigidity in the economy (Bresser & Nakano, 1989).

Another neo-structuralist approach by Lopes (1985, p.139) distinguishes between indexation and inertia, stating that they are independent phenomena and that inflationary inertia arises in chronically inflationary economies regardless of formal indexation mechanisms. Regarding the impact of indexation on inflation, his conclusions suggest that indexation has the potential to stabilize inflationary shocks while maintaining inertia. The author argues that formal indexation can stabilize inertial inflation by reducing the intensity with which the system multiplies the impact of natural shocks on inflation (Lopes, 1985, p.146). However, he also suggests that in some cases, indexation may hinder the complete restoration of real income peaks, as in the case of the PAEG wage rule, or prevent the reduction of the time interval between adjustments when the inflation process accelerates. Furthermore, the text also explores the possibility that intensifying indexation could increase the economy's vulnerability to inflationary shocks and highlights the potential downside of introducing indexed currency in a high-inflation environment (Lopes, 1985, p. 146).

Modiano (1985, p.25) argues that indexation can amplify the effects of supply and demand shocks in the economy, contributing to the persistence of inflation. It occurs because indexation causes prices and wages to adjust automatically to changes in shock variables, which can lead to an inflationary increase. Moreover, indexation can make it more challenging for

economic authorities to control inflation since automatic adjustments of prices and wages may render monetary and fiscal policies less effective.

Also, regarding the impact of indexation on inflation inertia, Arida and Lopes (1985, p.18) argue that indexation, which links prices and wages to past inflation rates, has contributed to the presence of inertia in Brazilian inflation. They explain that indexation creates a self-reinforcing cycle of inflation, where past inflation rates are used to adjust prices and wages, leading to further inflation. This cycle can be challenging to break as expectations of future inflation become embedded in the economy. This understanding is complemented by Resende (1984), who explains that indexation affects inflation because economic agents primarily seek to restore their previous peak of real income in the presence of high inflation rates. Hence, when setting prices, considerations of demand conditions become irrelevant, and the notion of relative prices is lost in the rapid increase of the general price index. Consequently, indexation ends up perpetuating inflation, making it challenging to reduce.

There is minimal contention within the neo-structuralist camp regarding the role of indexation in exacerbating inflation. Neo-structuralists tend to concur that indexation tends to sustain inflation at elevated levels. While it may not be the primary cause of inertia, as Lopes (1985) indicated, it can contribute to its perpetuation. However, neo-structuralists adopt a more nuanced stance when determining whether indexation can stabilize the economy. They perceive potential in employing indexation as a mechanism for stabilization while recognizing its potential to disrupt it. For example, Lopes (1985) understands that indexation has stabilizing effects regarding shocks. The same conclusion was reached by Resende (1984), who also suggested the distinction between inertia and indexation as separate and not inherently correlated phenomena. He also opens the door to interpreting indexation as a tool that could anchor expectations and potentially contribute to stability:

Eliminating legal indexation mechanisms, such as monetary correction, wage law, and rent law, would not solve the inflation problem because, at current inflation levels, indexation would persist even if these mechanisms were removed. The suppression of legal mechanisms would force economic agents to find alternative forms of indexation, which could lead to risks of economic disruption and speculative movements that could dramatically accelerate inflation (Resende, 1984, p.2).

Moving on to Eliana Cardoso's approach to the link between indexation and inflation, Cardoso (1983) extends prior research, which emphasized that the combination of accommodating monetary policies and exchange rate indexation, along with overlapping wage contracts and rational expectations, can result in a behavior of the inflation rate that resembles a "random walk."

According to Cardoso (1983, p.4), while many defend that the indexation rules contributed to an increase in the variance of inflation rates in many countries, concrete evidence to prove this claim was scarce. She recognizes that whether indexation is inflationary is complex and challenging to prove empirically (Cardoso, 1983, p.4).

To analyze the impact of indexation on inflation, Cardoso (1983) developed a log-linear model that evaluated inflation dynamics in different countries. The empirical evidence indicates that indexation and monetary accommodation can contribute to inflation persistence in different nations. The results for Brazil demonstrated that, due to monetary accommodation and wage and exchange rate indexation rules, Brazilian inflation followed a random walk after 1968. In other words, it is an erratic and unpredictable trajectory. This outcome was due to a combination of monetary accommodation and indexation that completely removed the inertia typically associated with inflationary trends, increasing the variance of inflation (Cardoso, 1983, p.10). Hence, she portrays indexation as one of the components contributing to a random walk behavior, which allows us to conclude that it certainly contributes to economic instability in Brazil. However, her interpretation of indexation as primarily destabilizing is punctual, and she adopts a more nuanced approach. Additionally, her investigation into whether indexation eliminates inertia is short-lived in her research agenda.

Regarding the indexation debate, Cardoso and Dornbusch (1987, p.5) mention that Fischer (1977) and Taylor (1979) have drawn attention to the persistence of price disturbances in a setting of overlapping long-term wage contracts even under forward-looking, rational expectations behavior, and a well-understood program of monetary control. However, they believe that in the Brazilian setting, institutional factors take, to a large extent, the room of relative wage and expectations mechanisms that characterize Fischer-Taylor contracts (Cardoso & Dornbusch, 1987, p.5). Their model displays the backward character of Brazilian inflation that is a consequence of the wage indexation.

They conclude that indexation in the presence of supply shocks is a source of inflation propagation (Cardoso & Dornbusch, 1987, p.14), a conclusion previously reached by Lopes (1985). However, indexation also has the potential to protect the inflation rate against rapid acceleration (Cardoso & Dornbusch, 1987, p.14). Therefore, indexation has both inflationary and anti-inflationary effects. Despite Ball and Cecchetti's (1991) framing the article as one that advocates for the inflationary consequences of indexation, Cardoso and Dornbusch (1987) have a balanced position that highlights the ambiguity of indexation. Furthermore, they encourage reintroducing indexation in labor and asset markets, with extended adjustment periods to control inflation (Cardoso & Dornbusch, 1987, p.15).

The conclusion that allies the use of income policies with fiscal austerity as an ideal combo to eliminate hyperinflation reached by Cardoso and Dornbusch (1987) is endorsed in "Inflation Stabilization with Incomes Policy Support: A Review of the Experience in Argentina, Brazil, and Israel" (Dornbusch and Simonsen 1987). The authors also discuss the potential use of indexation as a stabilizing mechanism. Dornbusch and Simonsen (1987) compare stabilization programs in those countries that are all facing hyperinflation. They highlight that heterodox stabilization strategies based on income policies are well-founded but tend to overlook fiscal issues (Dornbusch & Simonsen, 1987, p.2).

The authors point out that income policy can help fight inflation by introducing deflation gradually through indexation (Dornbusch & Simonsen, 1987, p.10). This could be achieved by lowering the profit margin or the real wage, which would require one of the parties to compromise and may be challenging to accept voluntarily (Dornbusch & Simonsen, 1987, p.10). Therefore, this possible class conflict represents the political issue of stabilization and can be mitigated by implementing an income policy.

In conclusion, Cardoso (1983) assures that indexation is inflationary, diverging from neostructuralists and the Gray-Fischer theorem that see it as a two-edged sword. However, her approach changes, later acknowledging that indexation can neutralize inflationary shocks.

Now, we turn back to the debate about the causes of the inflation escalation in Brazil during the late 1980s. In the last quarter of 1989, Brazilian inflation escalated to 40% per month (Cardoso, 1991). Cardoso addressed this sharp increase in Brazilian inflation in the NBER working paper "From Inertia to Megainflation: Brazil in the 1980s" (1991). The article explores

the impact of the balance of payments crisis and currency depreciation on domestic economic equilibrium.

According to Cardoso (1991, p.3), the foreign debt strategy of the 1970s and the balance of payments crisis in the early 1980s are essential to understanding the history of Brazilian inflation. In 1968, the Brazilian government began tapping private capital markets to endorse rapid expansion, adopting a debt-led import substitution development model that relied broadly on external capital markets for financing (Cardoso, 1991, p.3). The development model was prone to high inflation due to the indexation of wages, rents, financial assets, and exchange rates (Cardoso, 1991, p.3).

In terms of financing, the issue of foreign debt funding did not come to the forefront until the first oil crisis in 1973. At that time, Brazil held the unenviable position of being the most significant oil importer globally. Faced with the growing scarcity of foreign capital, the government responded by significantly increasing its external borrowing and deepening its commitment to the import substitution program¹⁴¹ (Cardoso, 1991, p.4). This combination of factors, including additional external borrowing, a surge in commodity prices, and occasional periods of reduced domestic economic activity, kept the country's balance of payments in check until the second oil crisis in 1979 (Cardoso, 1991, p.4).

However, when the second oil crisis unfolded, Brazil was grappling with one of the world's most considerable debts, entering what can be termed a "debt-led debt" phase. This phase entailed acquiring new foreign loans primarily to service the interest on previous loans¹⁴² (Cardoso, 1991, p.4). By 1980, Brazil successfully secured more funding, albeit at higher costs. Consequently, the country was compelled to implement austerity measures, leading to a decline in income for the first time in the post-war period (Cardoso, 1991, p.5). Nevertheless, the combined forces of export growth and import substitution began to take effect.

In 1984, there was a notable recovery in exports, which enabled the deficits accumulated during the 1970s to transform into surpluses. However, Cardoso (1991, p.6) astutely points out that these substantial trade surpluses might foster an illusion of optimism regarding the ability to overcome indebtedness through significant external transfers. It becomes imperative to factor in the debt when analyzing the broader context of Brazil's development issue, as the servicing

¹⁴¹ Petro-dollar recycling transferred resources to the country allowing high investment rate which allowed the country to grow above its trend level of 7 per cent after the first oil shock (p.4).

¹⁴² This dynamic was worsened by worldwide rising interest rates.

of this debt plays a pivotal role in the deterioration of the country's fiscal situation (Cardoso, 1991, p.6)

Unfortunately, the effort to improve the external account did not translate into better domestic performance. The sizeable positive government savings of the first half of the 1970s turned negative in the second half of the 1970s, a consequence of growing interest payments on household debt and the reduction in revenues from indirect taxes¹⁴³ (Cardoso, 1991, p.7). Concurrently, inflation rates in Brazil surged throughout the 1980s. The deterioration of the domestic account and its repercussions on inflation can be traced back to external debt and trade surpluses. As Cardoso (1991, p.7) observes, "In Brazil, the surpluses were used to pay interest on government debt while the government financed the purchase of foreign exchange from the private sector by issuing debt and printing money," exacerbating inflation. This Brazilian experience underscores the notion that enhancing the balance of payments and achieving domestic equilibrium do not always align (Cardoso, 1991, p.7).

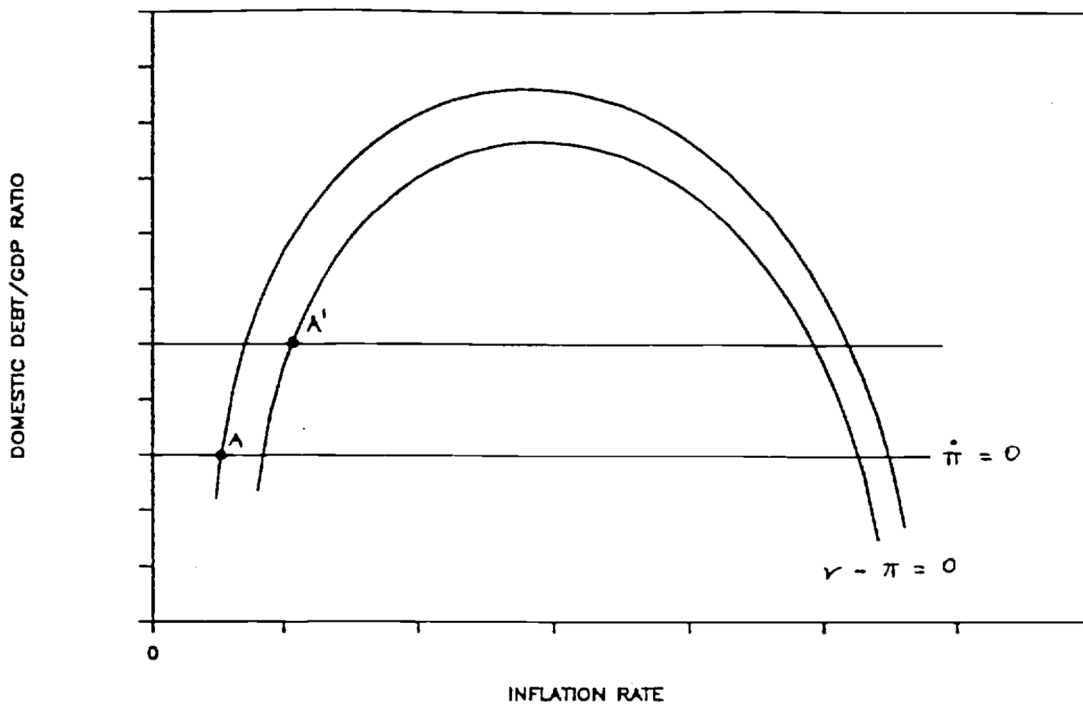
To elucidate this connection, Cardoso (1991) introduces an open economy model that helps clarify the link between Brazil's mounting incapacity to externally finance the public sector deficit after 1982 and the acceleration of inflation. The model yields two distinct steady-state equilibria: high and low inflation (Cardoso, 1991, p.26). The high inflation equilibrium is inherently unstable, and any perturbation will propel inflation onto an unsustainable trajectory. In contrast, the low inflation equilibrium can remain stable, and the temporal trajectory around this low inflation equilibrium resembles oscillations, as seen in the cobweb model (Cardoso, 1991, p.26).

The dynamic adjustment unfolds as follows: If the government, in response to an external finance constraint, opts to depreciate the exchange rate, it leads to an augmentation in the trade surplus. This shift lowers the steady-state budget constraint, as depicted in Figure 24 (Cardoso, 1991, p.26). However, this increment requires a higher full employment real interest rate, pushing the steady-state inflation schedule upward (the horizontal line in Figure 24) (Cardoso, 1991, p.26). Consequently, the economy undergoes a transition from its initial equilibrium (A) to a new equilibrium (A'), characterized by elevated domestic debt and inflation rates (Cardoso, 1991, p.27). Initially, inflation surges ahead of nominal interest rates, resulting in a decline in real interest rates and a boost in economic activity. However, as time

¹⁴³ The observed reduction comes from less-than-perfect fiscal indexation, tax evasion, and a growing underground economy (p.7).

progresses, interest rates begin to catch up and surpass inflation, escalating real interest rates and domestic debt (Cardoso, 1991, p.27).

Figure 24 – Changes in the Budget Constraint



Source: Cardoso, 1991, p. 57.

Expanding the budget deficit leads to an analogous outcome within the model. The model's dynamics illustrate that a reduction in external financing mirrors an increase in the budget deficit. This adjustment is achieved through currency depreciation, which, in turn, stimulates a trade surplus. Consequently, the alteration in the source of debt financing results in an elevated inflation rate and an increased ratio of domestic debt to income, whether in response to a heightened budget deficit or a reduction in external financial support (Cardoso, 1991, p.27). In essence, the debt crisis in Brazil exacerbates both inflation and the domestic debt burden, creating a self-feeding vicious cycle. As Cardoso (1991) outlined, this interconnection elucidates the relationship between Brazil's escalating incapacity to externally finance the public sector deficit after 1982 and the acceleration of inflation.

Cardoso (1991) does not provide an extensive analysis of comparative dynamics. Her model suggests that external credit rationing can have significant implications for the source of finance of the budget deficit and inflation. The increase in the trade surplus and the associated shifts in the steady-state budget constraint and inflation schedule highlight the complex dynamics involved in managing external credit and domestic debt in the context of inflation. The article has 1 citation in Google Scholar, but the Spanish¹⁴⁴ version of this article totals six citations. Because of the approach adopted throughout this chapter and the comparison yields a more interesting debate, her work will be compared to the work of the neo-structuralists.

Neo-structuralists have also approached the external balance affecting the domestic debt and inflation. However, their discussion is not similar to Cardoso's. Modiano (1982) provides a simple and standard debate on the difficulties of adjustment policies to external shocks and discusses how external shocks, such as changes in exchange rates or commodity prices, can impact the domestic economy in various ways. A sudden currency devaluation, for instance, can increase the prices of imported goods, leading to higher inflation. Conversely, falling export prices can affect domestic production and employment (Modiano, 1982).

Changes in commodity prices can also influence domestic production, particularly in countries heavily reliant on commodity exports. If prices decline, it may lead to deflation and, consequently, a drop in output and employment (Modiano, 1982). Conversely, rising prices can result in higher revenues, increased production, and potential inflation. External shocks can destabilize the domestic economy and require adjustments to mitigate their effects. However, the oscillation in domestic prices of import-substitution industrialization caused by these shocks and their impact on production and employment makes the implementation of adjustment policies challenging and the results less predictable (Modiano, 1982).

Resende (1984) also provides a more standard and straightforward debate about the relationship between inflation and the Brazilian public debt in the 1980s. However, the article does not deeply examine the external sector's impact on debt and inflation like Cardoso (1991). The author argues that high inflation and growing public debt were interconnected issues because inflation increased the real cost of debt and made it more challenging for the government to finance the nominal deficit. Additionally, because of inertial inflation, prices and wages tended to remain on inflationary paths even after inflation had been reduced,

¹⁴⁴ Cardoso, Eliana. (1991). De la inercia a la megainflación: El Brasil en los años ochenta. *El Trimestre Económico*, 58(229(1), 163-197.

worsening the pressure on the public sector to finance the nominal deficit (Resende, 1984). Also, he mentions the threat of external strangulation as one of the problems that still needs to be addressed to resolve the public debt crisis (Resende, 1984).

Resende (1984) proposes the creation of a daily indexed currency to eliminate inertial inflation and reduce the pressure on the public sector to finance the nominal deficit. In addition, he argues that creating a new indexed currency could help prevent bottlenecks in imports since the demand for this currency would allow for the redemption of part of the public debt.

Resende and Arida (1985) emphasize the IMF stabilization requirements and argue that the IMF did not immediately understand the role of indexation practices and the resulting inability to eliminate the nominal public sector deficit. The institution eventually accepted the necessity of defining and measuring the public sector's real or operational deficit and included it as a parallel target in IMF stabilization programs. The real or operational deficit of the public sector is defined as the difference between the nominal deficit or the public sector borrowing requirements in IMF terminology and the value of monetary correction, which focuses on the stock of indexed public debt. Again, the authors propose a monetary reform that involves de-indexation through the indexation of money, which they argue is a necessary condition for the effectiveness of demand policies in influencing the path of the price level.

Resende (1989) also addresses the role of the external sector concerning inflation and economic stabilization. For instance, he mentions that external financing is the first to disappear amid economic and political uncertainties accompanying worsening chronic inflations. Therefore, credibility and foreign investors' trust in economic stabilization are emphasized. He points out that credibility is an explicit condition for the program's success and for reducing the time required for investment recovery and growth. The determinants of credibility are numerous and complex, but eliminating the primary causes of inflationary pressure is an indispensable condition for gaining credibility. The paper also highlights that previous failed experiences and political wear and tear on the government may require an adjustment greater than what is objectively needed by macroeconomic conditions.

Dornbusch and Simonsen (1987, p.18) claim that the inflationary component of debt service can vastly overstate the increase in the government's real indebtedness. They explain that the deficit contribution of external debt in local currency is equal to the interest rate plus the rate of exchange depreciation times the ratio of external debt to income. If inflation is high, so will depreciation and hence the inflationary component of the external debt service. If

inflation were brought to zero, through whatever means, the budget deficit would be reduced correspondingly.

Dornbusch and Simonsen (1987, p.16) also discuss the relationship between inflation and budget deficit, inverting the otherwise usual causality: budget deficit is high because of inflation, not the contrary. The initial factor linking inflation to deficits is often called the Oliveira-Tanzi effect. In essence, inflation, in combination with delays in tax collection, results in a reduction in the actual value of tax revenues received by the government, with the decrease becoming more pronounced as inflation rates rise¹⁴⁵ (Dornbusch & Simonsen, 1987, p.16).

The Oliveira-Tanzi effect is an analytical element incorporated into the inertia theory of PUC-RJ. Initially, the effect was applied as an additional reason for the irrelevance of the public deficit in the stabilization policies of the early 1980s. Later, the effect was used as a theoretical basis for fiscal "overkill," where it would be necessary to generate a surplus that would be eroded during stabilization by the reverse Tanzi effect (Patkin Effect), as will be seen later (Bastos & Neto, 2015).

The previous discussion offered a broad overview of the discourse regarding the interplay between domestic debt, the constraints of the external sector, and inflation. It aimed to assess the extent to which the perspective advocated by inertialist economists aligns with Cardoso's viewpoint. Generally, the authors from PUC-Rio (Modiano, Arida, and Resende) pursue a different path, offering a more superficial examination of these variables. This difference in approach may stem from their relatively lesser emphasis on factors that contribute to inflation beyond inertia (Bastos & Neto, 2015). Their central argument posits that factors like demand pressures or even the public deficit, while essential factors that deserve attention, assume a secondary role in driving inflation compared to inertia (Bastos & Neto, 2015).

Conversely, Cardoso's (1991) perspective differs significantly, as evident from our earlier discussions. She delves deeper into the intricate relationship between foreign financing, domestic debt, and inflation, presenting a model and a dedicated, comprehensive paper that elucidates their interactions. Her conclusion underscores that an increase in the budget deficit produces analogous outcomes to a reduction in external budget financing. This scenario

¹⁴⁵ To illustrate, if income taxes from the previous year were to be paid in the current year under conditions of 100 percent inflation and no adjustments for tax liabilities, the government would find itself with only half of the real value of tax revenues it would have received in the absence of inflation, delays, or exact tax liability indexation (Dornbusch & Simonsen, 1987, p.16).

necessitates currency devaluation and a subsequent trade surplus expansion, resulting in an inflationary upswing. Neither of the previously mentioned papers establishes such connections or furnishes a model akin to Cardoso's, rendering the points of convergence between her work and that of the other authors less conspicuous than in the preceding discussions. However, Dornbusch and Simonsen (1987) make a more dedicated discussion about the public deficit and inflation. However, they look at the causality differently from the one implied in Cardoso (1991).

The subsequent discussion concludes with an overview of the author's approach to inflation. Cardoso claims to have only formed a decisive opinion about Brazilian inflation after reading Don Patinkin's article¹⁴⁶ "Israel's stabilization program of 1985, or some simple truths of monetary theory"¹⁴⁷. Inspired by the latter, she wrote: "Virtual Deficits and the Patinkin Effect" (Cardoso, 1998). This article aimed to introduce the concept of a virtual budget deficit¹⁴⁸ and explore the Patinkin effect, particularly in Brazil's hyperinflation experience. Cardoso's research sought to elucidate the intricate relationship between inflation rates and real government expenditures, shedding light on why high inflation rates in Brazil did not escalate into hyperinflation.

As elucidated by Cardoso in her article, the Patinkin effect refers to the inverse relationship between inflation rates and real government expenditures (Cardoso, 1998, p. 4). It contrasts the Tanzi effect, which postulates that real tax revenues decline as inflation rises,

¹⁴⁶Patinkin, Don, 1993, "Israel's Stabilization Program of 1985, Or Some Simple Truths of Monetary Theory." *Journal of Economic Perspectives* 7(2), pp. 103-28.

¹⁴⁷ The article "Israel's Stabilization Program of 1985, Or Some Simple Truths of Monetary Theory" by Don Patinkin (1993) discusses Israel's successful stabilization program of 1985, which aimed to eliminate high inflation rates. The article explains the program's distinctive features and how it was executed, emphasizing the importance of general-equilibrium monetary theory. It explains that the extensive use of indexation in the Israeli economy helped to mitigate the adverse effects of inflation on the distribution of income and the total output of the economy by automatically adjusting wages, prices, and other economic variables to changes in the general price level. Patinkin (1993) seeks to understand how politics shapes inflation, and claims that it can be explained as the result of the finance minister succumbing to the pressure of the ministers from the different parties that constitute the government. The author further explains that the rapid inflation led businesses and independent income-earners to delay in remitting their taxes, decreasing the real value of government tax receipts, and how the individual government ministries anticipated to spend their budgetary allocations at the beginning of each period for which they were released, thereby further increasing the real value of the government deficit. Finally, the author explains that policies that lead to a decrease in the rate of monetary expansion are a necessary component of any successful anti-inflationary policy.

¹⁴⁸ The model defines the fiscal deficit as a function of the virtual deficit, which is the deficit that would be observed if inflation were zero. In Cardoso's words "The virtual deficit is different from the operational or inflation-adjusted deficit, which deducts the decline in the real value of government debt caused by inflation from the nominal deficit, because it takes into account both the Tanzi and Patinkin effects and because the real interest rate might change if inflation were stabilized" (Cardoso, 1998 p.20). Therefore, it makes the virtual deficit an important tool in understanding the relationship between inflation and government spending.

leading to larger budget deficits at higher inflation rates. Cardoso's research emphasizes that, at elevated inflation levels, the Patinkin effect can outweigh the Tanzi effect, effectively stabilizing the economy during periods of hyperinflation (Cardoso, 1998, p. 4). Several factors contribute to this outcome, including the decline in real interest rates with increasing inflation, delays in salary payments by local governments, and discrepancies between planned and actual expenditures due to lower-than-expected inflation (Cardoso, 1998, p. 4).

Cardoso's article presents a model applied to the Brazilian context, demonstrating the inverse relationship between inflation rates and real government expenditures (Cardoso, 1998, p. 4). It also explores aspects such as the banking sector's share of seigniorage, interest rate spreads, and nonperforming loans in the aftermath of the Real Plan implemented in 1994. The reduction in the banking sector's share of seigniorage following the stabilization plan resulted from changes in required reserves. This shift in required reserves contributed to increased interest rate spreads, elevated real interest rates, and a surge in nonperforming loans after the stabilization (Cardoso, 1998, p. 18).

The significance of the Patinkin effect, as explained by Cardoso, lies in its contribution to understanding the prolonged extreme inflation rates in Brazil (Cardoso, 1998, p. 4). It clarifies that factors such as declining real interest rates with rising inflation, delayed salary payments, and expenditure discrepancies all play a role in this effect. The model of inflationary finance used in the study defines the fiscal deficit in terms of the virtual deficit, providing a more accurate representation of the government's actual fiscal position. It demonstrates how seemingly expansionary fiscal policies can result in real debts that remain manageable even at high inflation rates (Cardoso, 1998, p. 4). Thus, money creation is not regarded as the primary driver of inflation in Brazil within the framework of this model.

Regarding fiscal policy, Cardoso's research argues that expansionary fiscal policies can exacerbate the Patinkin effect by increasing the virtual budget deficit beyond the limits of maximum seigniorage (Cardoso, 1998, p. 4). This, in turn, can elevate the steady-state inflation rate. The results reveal that when the Patinkin effect is strong, a stable equilibrium can exist across a wide range of budget deficits despite modest seigniorage collection. This equilibrium is characterized by oscillations, where fiscal policy adjustments lead to fluctuations in money growth and inflation (Cardoso, 1998, p. 4).

Cardoso also discusses the interaction between reserve requirements and inflation within the context of the Patinkin effect (Cardoso, 1998, p. 4). An increase in the ratio of required reserves to deposits can raise the central bank's share of total seigniorage, reducing money growth and inflation. Importantly, this reduction in inflation can occur without modifications to fiscal policy (Cardoso, 1998, p. 4).

Finally, the article analyzes the impact of Brazil's Real Plan, a stabilization initiative that curbed inflation through fiscal adjustment, monetary reforms, and an exchange rate anchor (Cardoso, 1998, p. 17). Cardoso contends that the decline in inflation was primarily a result of reforms rather than fiscal policy tightening. For instance, the increased required reserves significantly reduced inflationary revenues for deposit banks (Cardoso, 1998, p. 18).

In conclusion, Cardoso's 1998 article contributes to understanding Brazil's hyperinflation experience and the factors contributing to sustained high inflation rates without escalating into hyperinflation. It emphasizes the significance of the Patinkin effect, fiscal policy, reserve requirements, and monetary reforms in shaping the country's economic landscape during a critical transition period from hyperinflation to stability.

When Google search for the term "Patinkin effect" is done, Cardoso (1998) is the first result, displaying the relevance of this work. In Brazil, the Patinkin effect is also known as the "Bacha effect" after the economist Edmar Bacha (1994) conducted empirical studies that suggested that the Patinkin effect dominated the Tanzi effect in periods of high Brazilian inflation (Giambiagi & Além, 2011, p.124). Cardoso (1998) mentions Bacha's paper and her work dialogues with his discussion.

When Bacha (1994) was elaborating the paper "O fisco e a inflação: uma interpretação do caso brasileiro"¹⁴⁹, Brazilian inflation was at a four-digit mark hitting 1.000 per year. There was an unresolved paradox in the Brazilian finances: the coexistence of mega inflation and a relatively low budget deficit¹⁵⁰.

Bacha (1994) criticizes the responses to the paradox given by what he refers to as "fundamentalist theories"¹⁵¹, which he believes fail to explain Brazilian inflation adequately.

¹⁴⁹ The alternative title in English is: "The revenue and the inflation: an interpretation of the Brazilian case".

¹⁵⁰ In 1992, Brazil faced an extraordinary challenge: rampant inflation exceeding a staggering 1000% annually. Paradoxically, this economic turmoil occurred alongside a relatively modest public sector deficit, amounting to just 1.7% of the country's GDP.

¹⁵¹ According to Bacha (1994), the three most commonly encountered "fundamentalist" theories in the literature that suggest the fiscal nature of Brazilian inflation are: loss of confidence in the national currency, anticipatory

Bacha (1994) proposed an opposing thesis based on two then-emerging yet relatively unexplored concepts: the potential budget deficit under conditions of zero inflation, the erosion of government budget expenditures by inflation, and the Patinkin effect. Both ideas are also present in Cardoso's 1998 analysis.

According to Bacha (1994), the concept of potential deficit with zero inflation can help explain the paradox of high inflation rates in Brazil despite a relatively small operational deficit in the public sector. The likely deficit is defined as the difference between government expenditures and the tax revenue collected in a situation of full employment and price stability. Zero inflation would result from balanced fiscal and monetary policies maintaining a constant money supply. However, due to the partial indexation of government expenditures and the sizeable potential deficit, very high inflation is required to achieve a relative balance in public accounts, using inflation repression to "finance" it.

Additionally, Bacha (1994) argues that the inflationary erosion of government budget expenditures contributes to the inflation conflict in Brazil. In a high-inflation context, public spending is adjusted with a delay concerning inflation, reducing the government's purchasing power and increasing pressure on prices. Furthermore, partial indexation of government expenditures leads to inflation feedback, as rising prices result in increased tax revenues and, consequently, increased government spending (Bacha, 1994).

Hence, the inflationary erosion of government budget expenditures perpetuates a vicious cycle of inflation and public deficits in Brazil, representing a significant challenge for economic stabilization in the country (Bacha, 1994). To resolve this inflation conflict, Bacha suggests transferring a substantial portion of the federal government's current functions to other government levels or the private sector (Bacha, 1994). This would allow the federal government to focus on functions that genuinely belong to it within a new development model characterized by controlled inflation (Bacha, 1994).

Despite the similarities regarding the main analytical tool regarded as the "Patinkin Effect" by Cardoso (1998), they also display some differences. While both concepts are related and address the impact of inflation on government finances, Cardoso's work explicitly focuses on the Patinkin effect as a theoretical framework, presenting it as a central and explicit concept.

inflation regarding the future monetization of domestic debt, and the financing of the high nominal deficit of the public sector with quasi-money.

Cardoso (1998) extensively explores its implications for inflation, provides a model in the article's body, and focuses more on monetary policy. On the other hand, while touching upon the same phenomenon, Bacha's work emphasizes the political causes of the erosion of government budget expenditures due to inflation that culminates in the discussion about the distributive conflict.

As exposed in this segment, it is possible to conclude that a clear contrast with the inertialist approach can characterize Cardoso's perspective on inflation. While the inertialist theory suggests that past inflation rates and expectations primarily drive inflation, Cardoso's theory emphasizes the role of other factors, such as the control of debt and fiscal policy, debt financing, exchange rate, and external shocks, to mention a few. This discordance with the inertialist view highlights Cardoso's intellectual standpoint on inflation, as she argues that inflation cannot be solely explained by inertial forces but requires a deeper analysis of multiple determinants of economic dynamics. Her opposition to the inertialist interpretation is very clear in Cardoso and Dornbusch (1987), Cardoso (1988a), and especially in Cardoso (1983) due to the claim of indexation leading to a random walk. Cardoso (1983) is possibly the most evident. To summarize, it is possible to say that Cardoso's main prescription to contain inflation is to keep fiscal policy and the public debt under control.

Furthermore, Cardoso's perspective on inflation also represents a partial departure from heterodoxy during the 1980s. While she shared some common ground with heterodox economists in recognizing the importance of structural factors at first, she later diverged from the heterodox view by acknowledging the relevance of monetary policy in controlling inflation. Her conclusion goes against the proposal of passive monetary and fiscal policies proposed in the neostructuralist interpretation¹⁵². This departure from heterodoxy reflects Cardoso's nuanced understanding of the complex interplay between fiscal and monetary policies in shaping inflation dynamics.

In terms of contrasting points with other theories presented, Cardoso's perspective diverges from the monetarist view, which emphasizes the dominant role of money supply in determining inflation. Instead, she emphasizes the importance of the interplay between fiscal policy and debt in driving inflation, disregarding the impact of monetary policy as the debt financing was not financed by money (Cardoso, 1988).

¹⁵² See Lopes (1985).

3.4 Other contributions by Eliana Cardoso

This section provides a collection of Eliana Cardoso's papers that were not mentioned in the previous sections but are essential to provide a more general idea of her intellectual trajectory and economic perspective. The highlighted articles are the following: the first one that resulted from her master's dissertation coauthored by Taylor, her advisor, and three papers that resulted from her Ph.D. Thesis coauthored by Dornbusch. In addition, a section is dedicated to a few articles on Latin America, highlighting her collaboration with Ann Helwege, her co-author of the book¹⁵³ about Latin America.

“Identity-based planning of prices and quantities: Cambridge and neoclassical models for Brazil” (Cardoso & Taylor, 1979) is a result of Cardoso's Master's dissertation. The primary objective of this paper is to conduct a comparative analysis of the implications arising from two distinct closure rules within a practical economic model. Specifically, it aims to assess the suitability of both Cambridge and neoclassical specifications in explaining Brazilian economic data from the 1960s. The findings presented by Cardoso and Taylor (1979) reveal that the model constructed based on Cambridge and Keynesian assumptions provides a superior description of Brazilian growth and distribution patterns during the 1960s compared to alternative neoclassical models. The Cambridge model exhibits more robust performance in the Brazilian context due to its underlying assumption of a demand-constrained economy, where output and employment are determined by effective demand. In contrast, neoclassical models operate on the premise of a supply-constrained economy, where output and employment are contingent on the availability of factors of production. The authors argue that the demand-constrained approach aligns better with the characteristics of developing countries like Brazil, where labor surpluses and underutilized capacity are prevalent.

Furthermore, Cardoso and Taylor (1979) undertake two forecasting exercises for the 1970s based on both Cambridge and neoclassical models. The results for 1973 indicate that both models highlight a trade-off between escalating inflation and an increased labor share. The neoclassical model predicts lower output growth due to diminishing marginal productivity of inputs as they substitute for each other within the level-of-utility constant elasticity of substitution (CES) production function utilized in the model. However, the neoclassical variant suggests that balance of payments challenges can be mitigated through opposing revaluation.

¹⁵³ Cardoso, E., & Helwege, A. (1992). *Latin America's Economy: Diversity, Trends, and Conflicts*. MIT Press.

In contrast, the Cambridge results present a more pessimistic view, indicating that the difficulties of balance payments cannot be effectively counteracted by opposing revaluation, as suggested by the neoclassical variant.

In their comprehensive work, "Three Papers on Brazilian Trade and Payments" (Cardoso & Dornbusch, 1980), the authors aim to tackle several key issues about Brazilian trade and payments. This paper amalgamates three distinct yet interrelated short papers, each delving into different aspects of Brazil's economic landscape, including the determinants of export behavior in the manufacturing sector, measures of the real exchange rate, and applying the monetary approach to external balance analysis.

The first paper, "An Equation for Brazilian Manufacturing Exports," offers critical insights into the dynamics of Brazilian manufacturing exports from 1959 to 1977. It presents estimates of an export supply equation that effectively characterizes export behavior. Notably, the paper reveals the presence of an export price elasticity of unity. It underscores the substantial responsiveness of exports to the relative level of domestic demand compared to productive capacity. This paper elucidates that the export behavior of Brazil's manufacturing sector during this period was significantly influenced by factors such as productive capacity, the relative price exporters faced (inclusive of subsidies), and the domestic output gap. Furthermore, it suggests the potential for extending the model to incorporate additional variables, such as exchange rates and foreign demand (Cardoso & Dornbusch, 1980).

The second paper, titled "Nominal and Effective Exchange Rates for Brazil 1959-1978," scrutinizes the behavior of the Brazilian exchange rate within a period characterized by substantial fluctuations and shifts in exchange rate policies. By employing a comprehensive model encompassing both short-run and long-run factors, including monetary and fiscal policies, external shocks, and expectations, this paper seeks to offer a nuanced understanding of the Brazilian exchange rate's determinants. The authors highlight the notable variability in the relative cost index before 1968, contrasting with the relatively stable behavior that followed (Cardoso & Dornbusch, 1980). This shift in behavior is attributed to Brazil's exchange rate regime, transitioning from infrequent, significant depreciations aimed at mitigating the impact of domestic inflation to a policy of mini-devaluations that effectively smoothed the process. Intriguingly, the paper highlights that despite this transformation, the real exchange rate continued to exhibit fluctuations (Cardoso & Dornbusch, 1980).

In this second paper, Cardoso and Dornbusch (1980) emphasize the crucial role of composition effects and relative price movements in explaining Brazil's export growth from 1967 to 1974. This era witnessed a significant increase in the comparable prices of processed foods, a category in which Brazil had a substantial presence in its export portfolio. They discuss the concept of the "commodity composition effect"¹⁵⁴ and argue that the prominence of foodstuffs in Brazil's exports was a key factor behind the dominance of this relative price effect. This finding suggests that relative price effects, driven by Brazil's strategic export focus on (processed) foodstuffs, were instrumental in shaping the country's export performance during this period.

Lastly, the third paper, "Brazil's External Balance: An Evaluation of the Monetary Approach" (Cardoso & Dornbusch, 1980), explores the extent to which the "monetary approach" can serve as an explanatory framework for Brazil's external balance. This paper critically evaluates the monetary approach model, particularly its applicability in elucidating the dynamics of Brazil's exchange market pressure variable.

Cardoso and Dornbusch (1980) conclude that the monetary approach is valuable for examining the interplay between monetary factors and the external balance, particularly within developing economies such as Brazil. However, the paper highlights several challenges. These include issues related to estimation methods, unwarranted constraints, and data quality, all of which raise substantial concerns about the reliability of the results and the assertion that the monetary approach fully elucidates the evolution of exchange market pressure in the Brazilian context. To address these challenges, the paper suggests that a more comprehensive model and improved data could help restore some confidence in the applicability of the monetary approach. Nonetheless, the analysis does not provide a definitive conclusion, leaving room for further exploration.

3.4.1 Cardoso's Insights into Latin American Economic Development.

In this thesis section, we examine a few of Eliana Cardoso's scholarly papers to elucidate her perspectives on Latin America's economic landscape. Cardoso places significant emphasis

¹⁵⁴ According to Cardoso & Dornbusch (1980, p.27) the "composition effects" refer to the changes in the relative composition of exports and imports over time. In the context of Brazilian export growth, the paper on the "commodity composition effect" argues that the important share of foodstuffs on the export side explains the dominance of this relative price effect in comparing demand and supply-side indicators of competitiveness. The paper suggests that the relative price effects are a neglected explanation for the export performance in the period, and that Brazil was in the right product mix to benefit from the boom in (processed) foodstuffs.

on the critical role of sound macroeconomic policies and fiscal discipline in promoting economic stability across the region. She claims the need to implement policies to reduce inequality. Additionally, she offers critiques of populism, suggesting that it can often lead to economic instability and contribute to heightened inequality.

In her 1991 article, "Privatization Fever in Latin America," Cardoso scrutinizes privatization's advantages and potential pitfalls in the region. She highlights several obstacles to privatization, including the need to sacrifice efficient state-owned enterprises to cover budget shortfalls, the importance of regulatory measures to prevent monopolistic exploitation, and the social costs associated with income redistribution and shifts in employment patterns. A stable regulatory and economic environment is also essential to attract private investors and prevent bureaucratic interference.

Cardoso (1991b, p.35) asserts that while privatization aimed to eliminate loss-making enterprises and rationalize economic relations, its fiscal benefits were often unclear, except for unprofitable state firms that could be swiftly liquidated. The risk of transferring monopolistic entities to private management without adequate regulation was a concern. Income redistribution and employment pattern changes added further complexity to the process (Cardoso, 1991b, p.35).

Cardoso (1991b, p.40) briefly surveys privatization experiences in specific Latin American countries. For instance, it is noted that Chile achieved notable success in privatizing its pension system, while Bolivia's privatization efforts were limited due to political favoritism. Brazil's privatization process encountered resistance from labor organizations and proceeded more gradually (Cardoso, 1991b).

The article discusses two unresolved challenges in privatization. Firstly, there is a need for enterprise reorganization before sale, including macroeconomic, market, and regulatory preparations. Secondly, ownership change entails social costs related to income redistribution and employment changes. Cardoso (1991b, p.35) recommends that because enterprises slated for privatization need an update, governments should accept a lower asking price and give new owners more leeway.

Lastly, the paper compares the shock treatment approach in Chile with the gradualism approach in Mexico regarding privatization. Cardoso (1991b, p. 41) favors Mexico's gradualist approach, as it allowed for learning from privatizing smaller firms first, reducing errors and

costs when privatizing larger companies. Negotiating concessions with public sector workers during privatization enhanced productivity through restructuring.

"Populism, Profligacy, and Redistribution" (Cardoso & Helwege, 1991) delves into the economic policies of Latin American populism, distinguishing between classic and new economic populism. Traditional populism primarily sought urban growth at the expense of rural interests, implementing policies such as raising minimum wages and imposing protectionist measures. In contrast, the emergence of new economic populism in the 1980s and 1990s aimed to stimulate growth and redistribute income through government intervention. This newer approach emphasized macroeconomic stability and market-oriented reforms while addressing social and economic inequalities.

Cardoso and Helwege (1991) highlight that contemporary populist governments in Latin America faced a common challenge: controlling budget deficits, often leading to economic instability and inflation. This economic scenario bore similarities to the experiences of classic populist leaders (Cardoso & Helwege, 1991, p.45). However, they stress that new populist leaders adopted diverse strategies, setting them apart from their predecessors (Cardoso & Helwege, 1991, p.45). These contemporary leaders employed various approaches, including optimistic demand stimulation, inward-looking industrialization (as observed in Peru), and experiments with market-based socialism (as seen in Nicaragua during the 1980s) (Cardoso & Helwege, 1991, p.45). Some leaders even struggled to impose contractionary adjustments, as in Brazil following a debt crisis (Cardoso & Helwege, 1991, p.46). Unfortunately, these initiatives often resulted in economic insecurity and failed to effectively target the poorest segments of the population, especially those in rural areas.

The authors' analysis also touches upon the demographics of poverty during the period under examination. Their findings revealed that most impoverished resided in rural areas (Cardoso & Helwege, 1991, p.62). Meanwhile, urban poverty primarily affected self-employed individuals and construction workers (Cardoso & Helwege, 1991, p.62). Children were particularly vulnerable to poverty due to larger family sizes at the lower end of the income spectrum. To alleviate urban poverty, the authors suggest implementing comprehensive social programs encompassing birth control, prenatal care, nutrition, sanitation, childcare, and primary school education (Cardoso & Helwege, 1991, p.62).

The paper underscores the limitations of relying solely on policies like raising the minimum wage to address inequality. This limitation arises because agricultural workers often earned wages below or around the minimum wage threshold, exacerbating intralabor inequality (Cardoso & Helwege, 1991, p.72). While minimum wage increases may benefit certain workers, they may not effectively target the poorest individuals and can negatively impact the fiscal balance¹⁵⁵ (Cardoso & Helwege, 1991, p.72).

In conclusion, while import substitution industrialization (ISI) played a pivotal role in classic populism's economic strategy, contemporary populist regimes in Latin America adopted a broader spectrum of economic policies. To effectively address poverty and inequality, the authors contend that policies should extend beyond wage increases and address fundamental human needs (Cardoso & Helwege, 1991, p.72). They also stress the importance of implementing these policies with care to avoid unintended consequences. In essence, the issue lies not in reducing poverty and inequality but in meticulously executing these objectives to promote economic stability and growth (Cardoso & Helwege, 1991, p.72).

The collaboration with Ann Helwege continues in “Below The Line: Poverty in Latin America” (Cardoso & Helwege 1992). The paper examines the persistent issue of poverty in Latin America despite improvements in social and economic indicators. They emphasize the interplay between economic and political poverty, where impoverished individuals lack the resources to voice their demands. Despite growth in the 1960s and 1970s, the 1980s brought stagnation, erasing previous gains. Economic growth alone did not significantly alleviate poverty.

During this period, physical infrastructure in education, health, sanitation, and housing deteriorated, leading to nutrition-related illnesses and other challenges (Cardoso and Helwege 1992, p. 20). Nevertheless, indicators like life expectancy, infant mortality, and literacy rates improved due to positive inertia (Cardoso and Helwege 1992, p. 20). Cardoso and Helwege present intriguing but contradictory findings regarding poverty trends in Latin America during the 1970s and 1980s. Brazil, for instance, witnessed a reduction in its poverty levels during the 1960s and 1980s (Cardoso & Helwege, p. 25). However, a concerning reversal occurred in the 1980s, leading to increased poverty rates during that decade (Cardoso & Helwege, p. 25).

¹⁵⁵ The authors cite the example of Brazil where the new constitution links pensions and social security to the minimum wage (p.72). Hence, increases in the minimum wage lead to higher pension and social security costs for the government. This can put a strain on the government's finances and lead to a larger fiscal deficit (p.72).

One noteworthy distinction highlighted in the study is the disparity between rural and urban poverty in Latin America. Rural poverty was shown to be both more widespread and severe, affecting approximately 60% of rural households during the 1970s (Cardoso & Helwege 1992, p.16). Even in countries like Argentina, Chile, and Uruguay, where urbanization was more prominent, rural poverty continued to impact over 20% of rural households (Cardoso & Helwege 1992, p.25). This rural-urban divide was further underscored because most of Mexico's population, the lowest 30%, resided in rural areas (Cardoso & Helwege 1992, p.25).

Brazil's "miracle" era of economic growth is highlighted as a case study, revealing a disproportionate benefit to the wealthy, resulting in high-income concentration (Cardoso & Helwege 1992, p.28). In contrast, Colombia's income distribution did not significantly worsen during the 1970s, partly attributed to its democratic governance and economic policies. However, differing opinions exist regarding Colombia's income distribution changes (Cardoso & Helwege 1992, p.29).

The study also sheds light on the impact of stabilization policies, such as those enforced by the International Monetary Fund (IMF), which negatively affect income distribution (Cardoso & Helwege 1992, p.30). To counteract those adverse effects, redistributive policies like direct transfers were proposed, although they come with challenges (Cardoso & Helwege 1992, p.30).

In conclusion, Cardoso and Helwege (1992) argue that effectively addressing poverty in Latin America demands a multifaceted approach. This approach should encompass measures to stimulate economic growth, redistribute income, and bolster social services for impoverished people. Additionally, the authors claim that international aid is recognized as a potential source of support for poverty reduction efforts and more efficient allocation of government resources, redistribution, and foreign aid.

In "Economic Development of Latin America from 1950 to 1980" by Cardoso and Fishlow (1992), the authors provide a comprehensive analysis of the economic development of Latin America during the mid-20th century, with a particular focus on the import-substitution industrialization (from now on ISI) strategy and its consequences. Their examination yields crucial insights into the challenges and achievements of Latin American economic development during this period.

The study depicts the region's postwar development and subsequent decline in the 1980s. Between 1950 and 1980, Latin America experienced substantial economic growth, with annual output expanding at a remarkable rate of 5.5%, resulting in per capita gains averaging 2.7% annually (Cardoso & Fishlow, p.197). This growth outperformed Europe during its Industrial Revolution in the late 19th and early 20th centuries (Cardoso & Fishlow, p.197). The adoption of the ISI policy, prioritizing industrialization through government intervention and trade restrictions, was a hallmark of this period. ISI emerged as a pragmatic response to the challenges faced by Latin American countries in the aftermath of the Great Depression and the disruptions caused by World War II, which left them with limited foreign exchange reserves (Cardoso & Fishlow, p.199).

However, despite its initial successes, it is pointed out that the ISI strategy had significant drawbacks. It often led to the creation of inefficient and uncompetitive industries that relied heavily on government subsidies (Cardoso & Fishlow, p.199). Additionally, it neglected the agricultural sector, which was crucial for food and raw material production. Moreover, ISI programs frequently resulted in inflation, budget deficits, and a shortage of foreign exchange reserves (Cardoso & Fishlow, p.201).

The authors use statistical models incorporating factors related to global economic integration to assess economic development more comprehensively. Their analysis reveals that export and import growth rates played pivotal roles in Latin American prosperity, as higher foreign exchange earnings helped prevent destabilizing crises with adverse production effects (Cardoso & Fishlow, p.204). Exports were vital for enhancing productive efficiency and averting stabilization crises driven by foreign exchange shortages. Similarly, imports supported import substitution by providing the necessary inputs to keep up with industrialization (Cardoso & Fishlow, p.204).

Inflation was a recurring challenge linked to ISI, often stemming from fiscal imbalances, increased budget deficits, and excessive monetary expansion (Cardoso & Fishlow, p.207). External debt also significantly drove inflation as countries resorted to domestic debt issuance and money printing to service their external debts during challenging economic times (Cardoso & Fishlow, p.210). They also highlight the prevalence of indexation in Latin American economies, contributing to persistent high inflation. While indexation helped stabilize relative pricing, it introduced rigidity to inflation, making it difficult to combat through conventional policies (Cardoso & Fishlow, p.210).

Despite the economic growth achieved through ISI, the authors underscore the persistence of poverty and unequal income distribution in Latin America. ISI could not effectively address mass poverty, with many households living below the poverty line. Rural poverty was especially acute, affecting over 20% of rural households in countries like Argentina, Chile, and Uruguay (Cardoso & Fishlow, p.213).

The 1980s marked a challenging period for Latin America, making it the "lost decade." Economic performance declined due to factors like the debt crisis, falling commodity prices, and the ISI strategy's inability to foster sustained economic growth (Cardoso & Fishlow, p.197). The authors argue that the comparative success of Asian economies during this period highlights the shortcomings of Latin America's ISI approach.

In conclusion, Cardoso and Fishlow (1992) contend that while ISI contributed to economic growth and industrialization in Latin America, it also had limitations, including macroeconomic imbalances, modest social achievements, and persistent poverty and income inequality. They predict that Latin America's future development will shift from ISI, embracing more private initiatives and market-oriented policies. However, the study does not delve into the specific policies or trends that would shape the region's development in the 1990s.

3.5 Conclusion

In conclusion, this chapter has provided an intellectual biography of Eliana Anastasia Cardoso, tracing her life's journey from her early years in Brazil to her extensive academic career and subsequent ventures in literature and illustration. It examined the various phases of her professional life, the key moments in her academic trajectory, and the impact of her research contributions.

Throughout her career, Cardoso has left a significant mark on the field of economics, with her research focusing on Brazilian inflation, the economic history of Brazil, the development of Latin America, international finance, and social and labor economics. Her work has not only contributed to academic discussions but has also influenced policy debates, particularly in the context of Brazil and Latin America.

Cardoso's early career was marked by her involvement in the debates between monetarist and structuralist approaches to inflation in Brazil, aligning herself with the Brazilian

neo-structuralist tradition represented by scholars from PUC-Rio. As reflected in her dissertation, this tradition aimed to challenge the prevailing monetarist interpretations and neo-Keynesian/Kaleckian theories. Neo-structuralism emerged as a response to global changes, including the Debt Crisis and the spread of neoliberal policies, offering a contemporary reinterpretation of ECLAC's Structuralist approach.

Later, Cardoso shifted perspectives, noticeable in her approach to the Brazilian mega-inflation. Her transition from initially rejecting the monetarist explanation of inflation to incorporating aspects of it into her analysis reflects the dynamic nature of the academic exercise in responding to real-world challenges. This shift demonstrates the importance of adaptability and open-mindedness in academia.

A remarkable dedication to lifelong learning and creative exploration marks Eliana Cardoso's journey. Her ability to reinvent herself professionally, not once but twice, underscores her unwavering commitment to intellectual pursuits. Furthermore, her continued engagement in scholarly activities and her recent publications demonstrate her enduring curiosity and dedication to making meaningful contributions to her fields of interest. Cardoso's contributions to economics and her subsequent endeavors in literature and illustration reflect a multidimensional and versatile intellect, leaving a lasting legacy in multiple spheres of scholarship and creativity.

CONCLUDING REMARKS

The present thesis provided an intellectual biography of three prominent economists. The first chapter featured Anna Schwartz, an economist of remarkable brilliance and a figure that sparked controversy. On one hand, she did receive some recognition within the field of economics, primarily owing to her collaboration on "A Monetary History." Numerous papers and accolades celebrate her memory, and her exceptional intellect and notable work, even those not conducted with Friedman, stand as a testament to her merit.

However, on the flip side, it is evident that she did not receive the same level of recognition as her collaborator, Milton Friedman. After thoroughly examining her extensive research and pivotal role in shaping Monetary History, it is natural to wonder why she was not considered for the Nobel Prize in Economics, a question raised by Tavlas (2013). While this question may remain unanswered, it invites us to reflect on potential reasons, especially considering that only two women have received this prestigious prize.

Returning to the themes discussed in the thesis introduction, which highlighted the disparities in how women and men are assessed in economics and the inherent biases in such evaluations, we can contemplate why Anna Schwartz was not given the recognition she deserved. While she denied that gender played a role in her experiences, her story aligns with the broader narrative of women being relegated to somewhat secondary roles in economics. Her personal experiences do not invalidate the issue of gender discrimination women face in economics.

Nevertheless, it is essential to acknowledge and celebrate her significant contributions to the field of economics. This thesis has offered a comprehensive assessment of her career, spanning from her early work and her collaborative efforts in "A Monetary History" to her later contributions. In doing so, it has presented a more holistic view of Anna Schwartz, extending beyond the shadow of a single book, however influential it may be. Anna Schwartz was undoubtedly a brilliant economist with contributions that far exceeded the boundaries of a single seminal work.

The second chapter of this thesis delved into an extensive discussion of Christina Romer's contributions to the field of economics. A meticulous analysis of her body of work makes it evident that Christina Romer is a prominent historian of economics. Her consistent

publication record in esteemed journals and her successful academic journey, including transitions between elite universities, testify to her remarkable expertise.

However, it is worth noting that even with her extensive credentials and undeniable prowess, Christina Romer did not escape the pervasive systemic sexism that often plagues academic and professional realms. Her appointment as Chair of the Council of Economic Advisers (CEA) during the Obama administration raised speculations that she might have been chosen merely to fulfill a gender representation quota within the new team. In fact, Romer herself questioned whether she was perceived as a product of affirmative action (Rampell, 2008). Yet, for those familiar with her body of research, it is evident that her qualifications were more than sufficient for the position.

Christina Romer's early research agenda primarily focused on studying American business cycles. Her initial papers focused on critically examining economic indexes to foster a more accurate understanding of economic stability. Subsequently, she delved into the intricate facets of the Great Depression, emphasizing the pivotal role of aggregate demand in both triggering and recovering from this economic catastrophe. Her research findings, particularly regarding the significance of monetary policy in halting the precipitous decline of GNP during the 1930s, have left an indelible mark on economic literature and continue to be cited extensively.

Examining Romer's work in the 1990s and 2000s reveals that her scholarly pursuits remained primarily rooted in the history of economics. Nevertheless, her foray into macroeconomics expanded during this period, reflecting a departure from her earlier focus. Notably, the theme of revisiting economic indexes persisted in her research, as did her enduring interest in evaluating American business cycles within historical contexts. Moreover, the discourse surrounding the Great Depression was revisited and reinforced.

Regarding policy recommendations, Christina Romer consistently underscores the paramount importance of monetary policy, championing the notion that "money matters." This perspective persists despite the impression left by her thesis that her work might not overtly endorse political intervention. Romer's approach to economics is rooted in empiricism, firmly advocating for testing hypotheses and subjecting beliefs to rigorous evidential scrutiny.

Christina Romer's illustrious career and prolific intellectual output continue to flourish, characterized by a commitment to empirical rigor and an unwavering dedication to advancing economic knowledge through scientific inquiry.

In the final chapter, we delve into Eliana Cardoso's intellectual journey, a notable aspect of this thesis. This chapter sheds light on her active involvement in the debate on inflation and how she adeptly positioned herself in a discourse predominantly dominated by men. Cardoso's contributions garnered recognition from prominent figures in the inflationary discourse of her era, with some even incorporating her work into their own. Her entry into the economic debate occurred in 1970, a period marked by a resurgence of female participation in economics in the United States, where she pursued her doctoral studies.

Cardoso's academic career was remarkably prolific, reflected in the highest number of publications among her contemporaries, as evidenced by database statistics. Her work transcended language barriers with Portuguese, Spanish, and English publications. She ventured into a wide array of economic topics, actively participating in diverse debates across various contexts. Notably, she excelled in male-dominated environments, holding prominent positions during several phases of her academic journey, including her tenure in the government of Fernando Henrique, a leading position at the World Bank, and a prominent position at the IMF. These achievements, combined with the quantity and quality of her publications, undeniably affirm her outstanding intellectual prowess as an economist.

While Cardoso personally attests that she did not encounter the effects of sexism, crediting her career's foundation on the predominantly liberal East Coast of the United States, it remains pertinent to acknowledge the challenges faced by women in the field. This acknowledgment is reinforced by the limited number of women in her doctoral cohort and the scarcity of female co-authors in her extensive publication record, highlighting the persistent obstacles women encounter when pursuing careers in economics.

In conclusion, this work contributes significantly to the literature on economic thought by spotlighting women's invaluable contributions to economic theory. It serves as an earnest effort to amplify the representation of women's work within the field, with the aspiration that the substantial intellectual effort invested in this thesis has propelled this objective forward.

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